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Energy performance of buildings — Assessment of overall energy performance

*Performance énergétique des bâtiments — Evaluation de la
performance énergétique globale*



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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](#)

The committee responsible for this document is ISO/TC 163, *Thermal performance and energy use in the built environment*, in collaboration with Technical Committee ISO/TC 205, *Building environment design*.

Introduction

This International Standard is prepared by ISO/TC 163, *Thermal performance and energy use in the built environment*, in collaboration with Technical Committee ISO/TC 205, *Building environment design* and is one of three closely linked documents dealing with definitions and general procedures for the overall building energy performance rating and certification (see also [Figure 1](#)):

- ISO/TR 16344, *Energy performance of buildings — Common terms, definitions and symbols for the overall energy performance rating and certification*;
- ISO 16343: *Energy performance of buildings — Methods for expressing energy performance and for energy certification of buildings*;
- ISO 16346: *Energy performance of buildings — Assessment of the overall energy performance*.

ISO/TR 16344 provides a coherent set of terms, definitions, and symbols for concepts and physical quantities related to the overall energy performance of buildings and its components, including definitions of system boundaries, to be used in all International Standards elaborated within ISO on energy performance of buildings.

ISO 16343 sets out ways of expressing the energy performance in an energy performance certificate of a building (including the technical building systems) and ways of expressing requirements as to the energy performance. This includes an overall numerical energy performance indicator and classes against benchmarks.

Their development greatly benefited from similar CEN documents (viz. CEN/TR 15615, EN 15217, and EN 15603) developed to support the European Energy Performance of Buildings Directive (EPBD).

A revision of the set of CEN standards to support the EPBD is anticipated in the near future. Issuing the ISO documents aims to bring the key subjects of building energy performance assessment to the global international level.

Given the strong demand for these International Standards at ISO level, it was decided not to delay the advancement of these International Standards and Technical Report by waiting on these CEN developments. However, it is expected that a future revision of these International Standards and Technical Report will be carried out in collaboration with CEN under the Vienna Agreement.

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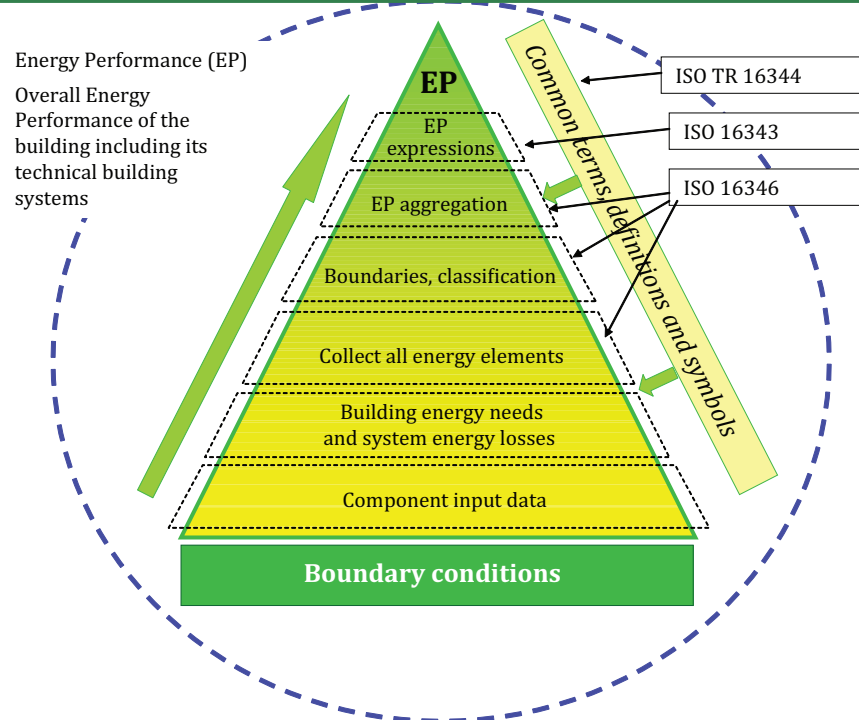


Figure 1 — Flow diagram illustrating the successive elements of the general procedures

Introduction to the assessment of overall energy performance

Energy assessments of buildings are carried out for various purposes, such as:

- judging compliance with building regulations expressed in terms of a limitation on energy use or a related quantity;
- checking for transparency in commercial operations through the energy certification and/or display of a level of energy performance (energy performance certification);
- monitoring of the energy efficiency of the building and its technical building systems;
- helping in planning retrofit measures through prediction of energy savings which would result from various actions.

This International Standard specifies a general framework for the assessment of overall energy use of a building and the calculation of energy ratings in terms of primary energy, CO₂ emissions, or parameters defined by a national energy policy. Separate standards calculate the energy use of services within a building (heating, cooling, hot water, ventilation, lighting, and transport for people) and produce results that are used here in combination to show overall energy use. This assessment is not limited to the building alone, but takes into account the wider environmental impact of the energy supply chain.

An allowance is made for energy that may be generated within or on the surface of the building and which is used to offset fuel and power drawn from other sources. Energy generated at the building site and exported is credited, provided it is exported for use elsewhere.

Energy certification of buildings requires a method that is applicable to both new and existing buildings and which treats them in an equivalent way. Therefore, a method to obtain equivalent results from different sets of data is presented in this International Standard. A method to assess missing data and to calculate a standard energy use for space heating and cooling, ventilation, domestic hot water, and lighting is provided. This International Standard also provides a method to assess the energy effectiveness of possible improvements.