
**Heating systems in buildings —
Method and design for calculation of
the system energy performance —
Combustion systems (boilers)**

*Systèmes de chauffage dans les bâtiments — Méthode de conception
et de calcul de la performance énergétique des systèmes — Systèmes
de combustion (chaudières)*



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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).

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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 205, *Building environment design*.

Introduction

This International Standard presents methods for calculation of the energy losses of a heat generation system. The calculation is based on the performance characteristics of the products given in product standards and on other characteristics required to evaluate the performance of the products as included in the system.

This method can be used for the following applications:

- judging compliance with regulations expressed in terms of energy targets;
- optimization of the energy performance of a planned heat generation system, by applying the method to several possible options;
- assessing the effect of possible energy conservation measures on an existing heat generation system, by calculating the energy use with and without the energy conservation measure.

Refer to other International Standards or to regional or national documents for input data and detailed calculation procedures not provided by this International Standard.

Heating systems also include the effect of attached systems such as hot water production systems.

This International Standard is a systems standards, i.e. it is based on requirements addressed to the system as a whole and not dealing with requirements to the products within the system.

Where possible, reference is made to applicable product standards. However, use of products complying with relevant product standards is no guarantee of compliance with the system requirements.

The requirements are mainly expressed as functional requirements, i.e. requirements dealing with the function of the system and not specifying shape, material, dimensions or the like.

Heating systems and cooling systems differ globally due to climate, traditions and national regulations. In some cases, requirements are given as classes so national or individual needs can be accommodated.

Heating systems in buildings — Method and design for calculation of the system energy performance — Combustion systems (boilers)

1 Scope

This International Standard is the general standard on generation by combustion sub-systems (boilers) for oil, gas, coal and biomass burning.

It specifies the

- required inputs,
- calculation method, and
- resulting outputs

for space heating generation by combustion sub-systems (boilers) including control.

This International Standard is also intended for the case of generation for both domestic hot water production and space heating.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 7345:1987, *Thermal insulation — Physical quantities and definitions*

ISO 13790, *Energy performance of buildings — Calculation of energy use for space heating and cooling*

3 Terms, definitions and symbols

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 7345:1987 and the following apply.

3.1.1

auxiliary energy

electrical energy used by technical building systems for heating, cooling, ventilation and/or domestic water to support energy transformation to satisfy energy needs

Note 1 to entry: This includes energy for fans, pumps, electronics, etc. Electrical energy input to the ventilation system for air transport and heat recovery is not considered as auxiliary energy, but as energy use for ventilation.

3.1.2

boiler

gas, liquid or solid fuelled appliance designed to provide hot water for space heating

Note 1 to entry: It can also be designed to provide domestic hot water heating.