



BSI Standards Publication

Energy performance of lifts, escalators and moving walks

Part 2: Energy calculation and classification for lifts (elevators)

National foreword

This British Standard is the UK implementation of EN ISO 25745-2:2015+A1:2023. It is identical to ISO 25745-2:2015, incorporating amendment 1:2023. It supersedes BS EN ISO 25745-2:2015, which is withdrawn.

The start and finish of text introduced or altered by amendment is indicated in the text by tags. Tags indicating changes to ISO text carry the number of the ISO amendment. For example, text altered by ISO amendment 1 is indicated by A1 A1.

The UK participation in its preparation was entrusted to Technical Committee MHE/4, Lifts, hoists and escalators.

A list of organizations represented on this committee can be obtained on request to its committee manager.

Contractual and legal considerations

This publication has been prepared in good faith, however no representation, warranty, assurance or undertaking (express or implied) is or will be made, and no responsibility or liability is or will be accepted by BSI in relation to the adequacy, accuracy, completeness or reasonableness of this publication. All and any such responsibility and liability is expressly disclaimed to the full extent permitted by the law.

This publication is provided as is, and is to be used at the recipient's own risk.

The recipient is advised to consider seeking professional guidance with respect to its use of this publication.

This publication is not intended to constitute a contract. Users are responsible for its correct application.

© The British Standards Institution 2023
Published by BSI Standards Limited 2023

ISBN 978 0 539 23636 1

ICS 91.140.90

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 30 April 2015.

Amendments/corrigenda issued since publication

Date	Text affected
31 October 2023	Implementation of ISO amendment 1:2023 with CEN endorsement A1:2023

English Version

Energy performance of lifts, escalators and moving walks - Part
2: Energy calculation and classification for lifts (elevators) (ISO
25745-2:2015)

Performance énergétique des ascenseurs, escaliers
mécaniques et trottoirs roulants - Partie 2: Calcul
énergétique et classification des ascenseurs (ISO 25745-
2:2015)

Energieeffizienz von Aufzügen, Fahrtreppen und
Fahrsteigen - Teil 2: Energieberechnung und Klassifizierung
von Aufzügen (ISO 25745-2:2015)

This European Standard was approved by CEN on 22 November 2014.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Foreword

This document (EN ISO 25745-2:2015) has been prepared by Technical Committee ISO/TC 178 "Lifts, escalators and moving walks" in collaboration with Technical Committee CEN/TC 10 "Lifts, escalators and moving walks" the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by October 2015, and conflicting national standards shall be withdrawn at the latest by October 2015.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of ISO 25745-2:2015 has been approved by CEN as EN ISO 25745-2:2015 without any modification.

European foreword to Amendment 1

This document (EN ISO 25745-2:2015/A1:2023) has been prepared by Technical Committee ISO/TC 178 "Lifts, escalators and moving walks" in collaboration with Technical Committee CEN/TC 10 "Lifts, escalators and moving walks" the secretariat of which is held by AFNOR.

This Amendment to the European Standard EN ISO 25745-2:2015 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by April 2024, and conflicting national standards shall be withdrawn at the latest by April 2024.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

Any feedback and questions on this document should be directed to the users' national standards body/national committee. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

Endorsement notice

The text of ISO 25745-2:2015/Amd 1:2023 has been approved by CEN as EN ISO 25745-2:2015/A1:2023 without any modification.

Contents

Page

Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms, definitions	2
4 Data collection and analysis tools	2
5 Calculation of energy consumption	3
5.1 Methodology	3
5.2 Calculation of running energy per day	3
5.2.1 Usage and number of starts per day	3
5.2.2 Average travel distance	4
5.2.3 Average running energy per metre	4
5.2.4 Start/stop energy consumption	4
5.2.5 Running energy of an average cycle with empty car	5
5.2.6 Daily running energy	5
5.3 Calculation of non-running (idle/standby) energy consumption per day	6
5.3.1 Running time per day	6
5.3.2 Non-running time per day	7
5.3.3 Time ratios of idle/standby modes	7
5.3.4 Daily non-running (idle/standby) energy consumption	8
5.4 Total energy consumption per day	8
5.5 Total energy consumption per year	8
5.6 Method for determining the daily energy consumption for energy storage systems	8
6 Lift energy efficiency classification	9
6.1 Rationale	9
6.2 Performance level for running	9
6.3 Performance levels for idle/standby	10
6.4 Classification of energy performance of the lift	10
7 Specific running energy for the reference cycle	11
8 Reporting	11
Annex A (informative) Specific usage category	13
Annex B (informative) Example calculation	14
Annex C (informative) Symbols	16
Bibliography	18

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 178, *Lifts, escalators and moving walks*.

ISO 25745 consists of the following parts, under the general title *Energy performance of lifts, escalators and moving walks*:

- *Part 1: Energy measurement and verification*
- *Part 2: Energy calculation and classification for lifts (elevators)*
- *Part 3: Energy calculation and classification for escalators and moving walks*

Introduction

This International Standard has been prepared in response to the rapidly increasing need to ensure and to support the efficient and effective use of energy. This International Standard provides

- a) a method to estimate energy consumption on a daily and an annual basis for lifts, and
- b) a method for energy classification of new, existing, or modernised lifts.

This International Standard is intended to be a reference for the following parties:

- building developers/owners to evaluate the energy consumption of various lifts;
- building owners and service companies when modernising installations including reduction of energy consumption
- the installers and maintenance providers of lifts;
- consultants and architects involved in specification of lifts.
- inspectors and other third parties providing energy classification services.

The total energy consumption over the entire life cycle of lifts consists of the energy to manufacture, install, operate, and the disposal of lifts. However, for the purpose of this International Standard, only operating energy (running, idle, and standby) performance is considered.

In the preparation of this International Standard, Technical Committee ISO/TC 178, Subcommittee WG10 has initiated extensive research, which included over 4 500 simulations of typical lift installations. The results of this research have been used to provide the numerical values shown in Tables 2 to 4.

This International Standard only considers traction, hydraulic and positive drive lifts, but can be used as a reference for alternative technologies.

This International Standard can be used in relationship with national/regional jurisdictional energy performance purposes.

It is assumed that whenever the energy performance of a lift is assessed to this International Standard, all components of the lift have been designed in accordance with usual engineering practice and calculation codes, are of sound mechanical and electrical construction, are made of materials with adequate strength and of suitable quality, are free of defects, are kept in good repair and working order, and have been selected and installed so that foreseeable environmental influences and special working conditions have been considered.

Energy performance of lifts, escalators and moving walks —

Part 2:

Energy calculation and classification for lifts (elevators)

1 Scope

This part of ISO 25745 specifies the following:

- a) a method to estimate energy consumption based on measured values, calculation, or simulation, on an annual basis for traction, hydraulic, and positive drive lifts on a single unit basis;
- b) energy classification system for new, existing, and modernized traction, hydraulic, and positive drive lifts on a single unit basis;

This part of ISO 25745 applies to passenger and goods passenger lifts with rated speeds greater than 0,15 m/s and only considers the energy performance during the operational portion of the life cycle of the lifts.

NOTE For other types of lifts (e.g. service lifts, lifting platforms, etc.), this part of ISO 25745 can be taken as a reference.

This part of ISO 25745 does not cover energy aspects, which affect the measurements, calculations, and simulations, such as the following:

- a) hoistway lighting;
- b) heating and cooling equipment in the lift car;
- c) machine room lighting;
- d) machine room heating, ventilation, and air conditioning;
- e) non-lift display systems, CCTV security cameras, etc.;
- f) non-lift monitoring systems (e.g. building management systems, etc.);
- g) effect of lift group dispatching on energy consumption;
- h) environmental conditions;
- i) consumption through the power sockets;

Text deleted.

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 25745-1, *Energy performance of lifts, escalators and moving walks — Part 1: Energy measurement and verification*