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Lifts for the transportation of persons and goods —

Part 32: Planning and selection of passenger lifts to be installed in office, hotel and residential buildings

Ascenseurs pour le transport des personnes et des charges —

Partie 32: Critères de sélection des ascenseurs à installer dans les immeubles de bureaux, les hôtels et les immeubles d'habitation

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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 of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 178, *Lifts, escalators and moving walks*.

This first edition cancels and replaces ISO 4190-6:1984.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

A lift installation describes a set of lifts by detailing the number, size, floors served, speed and various other characteristics of the lifts. An appropriate lift installation is usually one which provides good service to potential passengers with the least cost in terms of building core space.

In earlier years, the lift industry relied on probability based uppeak analysis formulae which calculated interval and handling capacity values. If the interval and handling capacity values of a specific lift installation meet recommended criteria, then the configuration is assumed to be acceptable. This traditional uppeak analysis worked well when lifts were relay-based and is still used for evaluating simple situations or to obtain initial estimates for more complex situations.

Some lifts now include sophisticated computer program-based traffic control systems. These control systems are difficult to describe with formulae but can be evaluated with the use of computer simulation programs.

This document provides two methods to determine an appropriate lift installation. The methods areas follows.

1) Calculation: the calculation method uses traditional uppeak analysis formulae. Selection charts in Annex C based on the calculation method provide a quick way of determining the lift installation for simple scenarios. The calculation method determines interval and handling capacity values that can be used to evaluate a lift installation. This method is recommended for relatively simple situations or to obtain an initial lift installation to be further analysed via simulation. The ISO calculation method is described in Clause 7 and a typical example using the formulae is given in Annex D.

2) Simulation: the simulation method is used to clarify service levels with different traffic control systems such as destination control. This method is recommended in complex situations or when detailed information other than interval and uppeak handling capacity values is desired. The ISO simulation method is described in Clause 8 and a typical example is given in Annex E.

Both levels require building, passenger and lift data (Clause 6). An initial data form is shown in Annex F.

This document applies the recommendation of ISO/TR 11071-2 which says:

> "While the entire subject of capacity and loading has historically been treated in safety codes as one and the same, it might be more meaningful in the future writing of safety codes to cover loading as a separate issue from capacity. One refers more appropriately to the traffic handling capacity, whereas the other refers to the maximum carrying capacity, which has a direct bearing on safety."

Accordingly, this document distinguishes car capacity and car loading by passengers when discussing the selection of rated load and available car area (6.5.3 and Annex A).

This document is intended to be a reference in the early stages of a project and can be especially useful to clients or building owners, architects, general and specialized engineering consultants, building managers, lift consultants, lift contractors, building developers, principal contractors and other interested parties.

This document reflects the requirements of the global marketplace and takes into account the special needs such as accessibility of persons with disabilities (6.5.1). Although this document does not give recommendations for the planning or selection of goods (US: freight[1)]) lifts, goods lifts are an important aspect of lift planning.

1) Hereinafter, the term "goods" is used in place of the term "freight".

Lifts for the transportation of persons and goods —

Part 32:
Planning and selection of passenger lifts to be installed in office, hotel and residential buildings

1 Scope

This document covers traffic planning and selection of new passenger lift installations in office, hotel and residential buildings. The requirements and recommendations given are applicable to both simple and complex lift installations.

This document gives guidance to select the most appropriate method of traffic planning for each case within the scope.

This document permits the number and configuration of lifts and their main characteristics to be determined at the early stages of building design, provided that the size and intended use of the building is known.

This document is applicable to lifts classified according to Table 1.

Table 1 — Classification of lifts according to ISO 8100-30

Class	Purpose
Class I	Lifts designed for the transport of persons
Class II	Lifts designed mainly for the transport of persons but in which goods can be carried
Class VI	Lifts designed to suit buildings with intensive traffic, i.e. lifts with speeds of 2,5 m/s and above

This document is applicable to mixed use buildings provided that the mixed use can be evaluated separately as either office, residential or hotel use. This document proposes a standardized method of lift traffic planning. Alternative methods can be valid but are not in the scope of this document.

This document gives basic requirements and recommendations as part of the planning and selection of lift(s) relating to:

a) the design criteria to be evaluated;

b) the values of design criteria to be used;

c) a calculation method (see Clause 7) to be used as part of simple planning and selection of lifts (5.3);

d) a simulation method (see Clause 8) to be used as part of simple and more complex planning and selection of lifts (5.3);

e) output report format of lift planning and selection analysis to be provided to interested parties;

f) consideration of existing safety standards and cultural norms for determining the number of persons that can fit into a specific size of car[2)];

g) accommodation for luggage, bicycles, prams, etc., or other non-personal items that can be transported with passengers in the lifts;

h) accessibility for persons with disabilities.

2) The European Lift Directive 2014 refers to the car as a carrier.

This document does not address:

i) the transportation of goods only;

j) the transportation of passengers using multiple cars sharing a single hoist way;

k) the transportation of passengers using double deck systems;

l) terminal to terminal travel in excess of 200 m and/or rated speed above 7 m/s;

m) variations to the calculation method (e.g. traffic conditions other than uppeak, door dwell time definitions, unequal floor heights, unequal floor populations, speed not being reached in one floor jump, etc.);

n) variations to the simulation method (e.g. passenger batches or traffic templates with variable passenger demand);

o) design of simulator models or traffic control systems;

p) advanced passenger features (e.g. walking speed);

q) performance verifications of the design after installation.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

ISO 4190-5, *Lift (Elevator) installation — Part 5: Control devices, signals and additional fittings*

ISO 8100-30:2019, *Lifts for the transport of persons and goods —Part 1: Safety requirements for passenger and goods passenger lifts*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 4190-5, ISO 8100-30 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1
available car area
A_{car}
area of the car, which is available for passengers or goods during operation of the lift

Note 1 to entry: The available car area is expressed in m^2.

[SOURCE: EN 81-20:2014, 3.3, modified — Note 1 to entry has been added.]

3.2
conventional control system
lift system with collective control that requires call buttons on each landing and floor selection buttons in the car