SLOVENSKI STANDARD
oSIST prEN 81-21:2020

01-december-2020

Varnostna pravila za konstruiranje in vgradnjo dvigal (liftov) - Dvigala za prevoz oseb in blaga - 21. del: Nova osebna in tovorno-osebna dvigala v obstoječih stavbah

Safety rules for the construction and installation of lifts - Lifts for the transport of persons and goods - Part 21: New passenger and goods passenger lifts in existing building

Sicherheitsregeln für die Konstruktion und den Einbau von Aufzügen - Aufzüge für den Personen- und Gütertransport - Teil 21: Neue Personen- und Lastenaufzüge in bestehenden Gebäuden

iTeh STANDARD PREVIEW
(standards.iteh.ai)

Règles de sécurité pour la construction et l'installation des élévateurs - Elévateur pour le transport de personnes et d'objets - Partie 21 : Ascenseurs et ascenseurs de charge neufs dans les bâtiments existants

oSIST prEN 81-21:2020
https://standards.iteh.ai/catalog/standards/sist/cec986e9-1577-4961-951e-ecdc76c19445/osist-pren-81-21-2020

Ta slovenski standard je istoveten z: **prEN 81-21**

ICS:

91.140.90 Dvigala. Tekoče stopnice Lifts. Escalators

oSIST prEN 81-21:2020 **en,fr,de**

2003-01.Slovenski inštitut za standardizacijo. Razmnoževanje celote ali delov tega standarda ni dovoljeno.

oSIST prEN 81-21:2020

iTeh STANDARD PREVIEW
(standards.iteh.ai)

oSIST prEN 81-21:2020
https://standards.iteh.ai/catalog/standards/sist/cec986e9-1577-4961-951e-ecdc76c19445/osist-pren-81-21-2020

oSIST prEN 81-21:2020

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

DRAFT
prEN 81-21

October 2020

ICS 91.140.90

Will supersede EN 81-21:2018

English Version

Safety rules for the construction and installation of lifts - Lifts for the transport of persons and goods - Part 21: New passenger and goods passenger lifts in existing building

Règles de sécurité pour la construction et l'installation des élévateurs - Elévateur pour le transport de personnes et d'objets - Partie 21 : Ascenseurs et ascenseurs de charge neufs dans les bâtiments existants

Sicherheitsregeln für die Konstruktion und den Einbau von Aufzügen - Aufzüge für den Personen- und Gütertransport - Teil 21: Neue Personen- und Lastenaufzüge in bestehenden Gebäuden

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 10.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

If this draft becomes a European Standard, 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.

This draft European Standard was established by CEN 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.

oSIST prEN 81-21:2020
https://standards.iteh.ai/catalog/standards/sist/cec986e9-1577-4961-951e-ea4c76e19445/osist-pren-81-21-2020

CEN members are the national standards bodies of 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, Turkey and United Kingdom.

Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Warning : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

© 2020 CEN All rights of exploitation in any form and by any means reserved worldwide for CEN national Members.

oSIST prEN 81-21:2020

Contents

Page

iTeh STANDARD PREVIEW
(standards.iteh.ai)
oSIST prEN 81-21:2020
https://standards.iteh.ai/catalog/standards/sist/cec986e9-1577-4961-951e-ecdc76c19445/osist-pren-81-21-2020

oSIST prEN 81-21:2020

iTeh STANDARD PREVIEW
(standards.iteh.ai)
oSIST prEN 81-21:2020
https://standards.iteh.ai/catalog/standards/sist/cec986e9-1577-4961-951e-ecdc76c19445/osist-pren-81-21-2020

oSIST prEN 81-21:2020

European foreword

This document (prEN 81-21:2020) has been prepared by Technical Committee CEN/TC 10 “Lifts, escalators and moving walks”, the secretariat of which is held by AFNOR.

This document is currently submitted to the CEN Enquiry.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

This document will supersede EN 81-21:2018.

In comparison with the previous edition, the following significant changes have been made:

— all referenced standards have now been dated ;

— a new Annex ZA has been developed in order to be aligned with the requirements of the EU Commission Standardization Request “M/549 C(2016) 5884 final”.

No technical changes have been made during this revision.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

The content of this document provides the enhanced design rules, examinations and tests for lifts installed into existing buildings.

This standard is part of the EN 81 series of standards. The structure of the EN 81 series is described in CEN/TR 81-10:2008.

oSIST prEN 81-21:2020
https://standards.iteh.ai/catalog/standards/sist/cec986e9-1577-4961-951e-ecdc76c19445/osist-pren-81-21-2020

oSIST prEN 81-21:2020

Introduction

This document is a type C standard as stated in EN ISO 12100:2010.

The lifts concerned and the extent to which hazards, hazardous situations or hazardous events are covered are indicated in the Scope of this document.

When requirements of this type-C standard are different from those stated in type-A or type-B standards, the requirements of this type-C standard take precedence over the requirements of the other standards, for machines that have been designed and built according to the provisions of this type C standard.

The main concern dealt with in this document is the reduction of top and pit clearances that may be required due to site conditions. The adopted principle of safety is based on two levels of achievement: first by means of an electrical stopping of the lift car, then by means of a mechanical stopping of the lift car.

When drafting this document, it has been considered for reduced overhead and pit the following:

a) Risk reduction measures that rely solely on operations in compliance with procedures are considered as not acceptable.

b) The risk reduction measures are automatically (without any intervention) activated, or manually activated if their use is mistake-proof such that a person cannot come to harm during and after their deployment, or a combination of both is used.

Within each member state in Europe there may be a definition of what might be considered an existing building. In order to have a uniform understanding of the requirements of this document, an existing building within the terms of this document is understood to be one which was already in use before the lift was installed. A building whose internal structure is completely renewed is considered as a new building within the terms of this document.

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST prEN 81-21:2020
https://standards.iteh.ai/catalog/standards/sist/cec986e9-1577-4961-951e-ecdc76c19445/osist-pren-81-21-2020

oSIST prEN 81-21:2020

1 Scope

This document specifies the safety rules related to passenger and goods/passenger lifts installed in existing buildings where limitations enforced by certain building constraints mean that some requirements of EN 81-20:2020 cannot be met.

This document is intended to be read and applied in conjunction with EN 81-20:2020. It addresses the following constraints and gives requirements for alternative solutions:

— existing perforate walls of the lift well;

— reduction in available well are leading to reduced distance between car, counterweight or balancing weight;

— counterweight or balancing weight in a separate existing well;

— reduced building dimensions and clearances leading to:

  — reductions in available space for headroom and pit;

  — reduced car roof balustrade dimensions;

  — reduced height of sill apron;

  — reduced height of machine and/or pulley room;

  — reduced available area for access door/trap door;

  — reduction in available height of landing doors.

iTeh STANDARD PREVIEW
(standards.iteh.ai)
oSIST prEN 81-21:2020
https://standards.iteh.ai/catalog/standards/sist/cec986e9-1577-4961-951e-cede76c1944b/osist-pren-81-21-2020

This document is not applicable to lifts installed before the date of its publication.

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.

EN 81-20:2020, *Safety rules for the construction and installation of lifts - Lifts for the transport of persons and goods - Part 20: Passenger and goods passenger lifts*

EN ISO 12100:2010, *Safety of machinery - General principles for design - Risk assessment and risk reduction (ISO 12100:2010)*

EN ISO 13857:2019, *Safety of machinery - Safety distances to prevent hazard zones being reached by upper and lower limbs (ISO 13857:2019)*

ISO 3864-1:2011, *Graphical symbols - Safety colours and safety signs - Part 1: Design principles for safety signs and safety markings*

oSIST prEN 81-21:2020

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 12100:2010, EN 81-20:2020 and the following apply.

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

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

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

3.1
movable stop
mechanical device that under normal operation allows the free movement of the lift between normal terminal stops

Note 1 to entry: Where a person enters on the car roof or in the pit, the device limits the travel of the car to ensure sufficient refuge space in the headroom or in the pit.

3.2
triggering device
device for operating a stopping gear by a mechanical linkage when the lift car passes a predetermined position in the well

Note 1 to entry: This device is activated when an access to the lift well is opened by means of a key.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

3.3
stopping gear
mechanical device for stopping, and maintaining stationary the lift car in the case of movement of the lift car above and/or below a predetermined position in the well to protect person(s) on the car roof and/or in the pit

oSIST prEN 81-21:2020
https://standards.iteh.ai/catalog/standards/sist/ecc986e9-1977-4961-951e-ecdc76c19445/osist-pren-81-21-2020

3.4
pre-triggered stopping system
system including the triggering device, the stopping gear and a mechanical linkage in between

Note 1 to entry: Under normal operation of the lift, the system allows the free movement of the lift between normal terminal stops. Where a person enters on the car roof or in the pit the system ensures refuge spaces in the headroom or in the pit.

oSIST prEN 81-21:2020

4 List of significant hazards

This clause contains all the significant hazards, hazardous situations and events, as far as they are dealt with in this document, identified by risk assessment as significant for this type of machinery and which require action to eliminate or reduce the risk (see Table 1).

Table 1 — List of significant hazards

No	Hazards as listed in Annex B of EN ISO 12100:2010	Relevant clauses in this document
1	**Mechanical hazards** due to: - Machine parts or work pieces, e.g.: - Accumulation of energy inside the machinery, e.g.:	
	Crushing hazard	5.5, 5.7
	Shearing hazard	5.2 a), 5.4.2
	Drawing-in or trapping hazard	5.5.3, 5.7.3
	Impact hazard	5.3, 5.4.3, 5.9, 5.10, 5.11, 5.12.
	Slip, trip and fall of persons (related to machinery)	5.2 b), 5.4.2, 5.8
	- Uncontrolled amplitude of movements	5.4.1, 5.4.3
	- From insufficient mechanical strength of parts	5.5.2.3.2 d), 5.6.1.2 a), 5.7.2.3.2 d), 5.8.1
	- Falling of person from person carrier	5.6, 5.8.1
8	**Hazards generated by neglecting ergonomic principles in machinery design** as, e.g. hazards from:	
	Access	5.4.2 d), 5.9, 5.10, 5.11, 5.12
	Inadequate local lighting	5.4.2 h), 5.4.2 i)
	Unhealthy postures	5.5.1
	Human error, human behaviour	5.5.4, 5.7.4, 7.2
	From abnormal conditions of assembly / testing / use / maintenance	5.4, 5.5, 5.6, 5.7, 5.8
9	**Hazards associated with the environment in which the machine is used**	
	Failure of the power supply	5.5.2.5.1.1, 5.5.3.1, 5.5.3.2, 5.7.2.5.1.1, 5.7.3.1, 5.7.3.2
	Failure of the control circuit	5.5, 5.7
	Unexpected start-up, unexpected overrun / overspeed (or any similar malfunction) from	
	- Restoration of energy supply after an interruption	5.5.4, 5.7.4

iTeh STANDARD PREVIEW
(standards.iteh.ai)
oSIST prEN 81-21:2020
https://standards.iteh.ai/catalog/standards/sist/...1577-4961-951e-aedb76e19445/osist-pren-81-21-2020

oSIST prEN 81-21:2020

5 Safety requirements and/or protective measures

5.1 General

Lifts within the scope of this standard shall comply with the relevant safety requirements and/or protective measures of the following clauses where one or several requirements in EN 81-20:2020 cannot be fulfilled. In addition, lifts shall be designed according to the principles of EN ISO 12100:2010 for relevant but not significant hazards, which are not dealt with by this document.

5.2 Perforate wall of the lift well

Where due to the lift well of the existing lift being perforate clause EN 81-20:2020, 5.2.5.2 shall be replaced with the following:

Any existing well enclosure shall be perforate provided that:

a) EN ISO 13857:2019, 4.2.4.2 is fulfilled; and

b) a protective imperforate screen shall be provided around the landing door locking devices in order to prevent any manipulation of the locking devices by means of a rigid rod 0,30 m long.

5.3 Distance between car, counterweight or balancing weight

Where due to existing building constraints the distance between car and counterweight/balancing weight according to EN 81-20:2020, 5.2.5.5.1 h) cannot be achieved the following shall apply.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

The car and its associated components shall be at a distance of at least 25 mm from the counterweight or balancing weight (if there is one) and its associated components.

To avoid any impact between the car (and its associated components) and the counterweight or balancing weight (and its associated components), in case of failure of normal guidance, emergency guidance on the car and counterweight shall be provided to maintain the car and the counterweight in their horizontal position.

5.4 Counterweight or balancing weight in a separate well

5.4.1 General

Where the counterweight or balancing weight has previously been accommodated in a separate existing well, and the configuration on site does not permit the installation of a lift having an available car area sufficient to fulfil the transport needs if the counterweight or balancing weight is repositioned to be in the same well as the car, the requirements of EN 81-20:2020, 5.2.5.1.2 are added to as follows:

NOTE The standard covers only the installation of one counterweight (or balancing weight) in its own well.

5.4.2 Counterweight or balancing weight well provisions

In case of a separate well for the counterweight/balancing weight, the following requirements apply:

a) all requirements related to the totally enclosed well (EN 81-20:2020, 5.2.1.8 and 5.2.5.2) shall be fulfilled for the well of the counterweight/balancing weight;

b) inspection doors shall be provided at both ends of the separate well and where necessary between them to allow safe maintenance and examinations of the well equipment; they shall comply with EN 81-20:2020, 5.2.3;

c) the distance between inspection doors and equipment requiring maintenance or inspection shall not exceed 0,7 m;

oSIST prEN 81-21:2020

d) where a safety gear is installed at the counterweight/balancing weight, inspection doors shall provide access to be able to inspect and maintain the full travel of the counterweight/balancing weight;

e) stopping device(s) accessible on opening the inspection doors at both ends of the separate well shall be provided, in conformity with the requirements of EN 81-20:2020, 5.12.1.11;

f) electric socket outlets accessible on opening the inspection doors at both ends of the well shall be provided as defined in EN 81-20:2020, 5.10.7.2;

g) the separate well shall be exclusively used for the lift in compliance with EN 81-20:2020, 5.2.1.2;

h) the separate well shall be provided with permanently installed electric lighting, giving an intensity of at least 50 lux on the equipment requiring maintenance/inspection;

i) means to switch the separate well lighting shall be provided on opening the inspection door at the lower end of the well.

5.4.3 Guiding of the counterweight or balancing weight

Where a counterweight or balancing weight is installed into its own well in accordance with 5.4.2, the requirements of EN 81-20:2020, 5.7.1 are added to as follows:

When travelling in a separate well, the counterweight or the balancing weight shall be guided by ropes or by the shape of the counterweight or the balancing weight and its well enclosure.

If the counterweight or balancing weight is resting on its buffers it shall be kept in a substantially upright position by the use of a small distance to the well enclosure or an emergency guiding.

Provisions shall be made so as to avoid the counterweight or the balancing weight to rotate, e.g. by using equal number of left and right twisted suspension ropes.

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST prEN 81-21:2020
https://standards.iteh.ai/catalog/standards/sist/cec986e9-1577-4961-951e-ed4c76c19445/osist-pren-81-21-2020

Where its shape guides the counterweight or balancing weight, the enclosure of the well shall be continuous and flush without any protrusion from which the counterweight or the balancing weight can be blocked. The well enclosure shall be covered by durable material.

In case of ropes as guiding elements, a minimum number of 4 ropes shall be used. Springs or weights shall tighten the ropes. The horizontal free distance between the counterweight or the balancing weight and the well enclosure shall be at least 50 mm if the enclosure of the well is continuous and flush otherwise it shall be increased by 2 mm for each meter of distance between the fixations of the ropes.

5.5 Reduced clearances in the headroom

5.5.1 General

Where due to existing building constraints the dimensional requirements of EN 81-20:2020, 5.2.5.7 for headroom cannot be met, it shall be replaced by the following:

5.5.2 Devices providing refuge spaces in the headroom

5.5.2.1 General

The devices shall be:

a) either movable stops; or

b) a pre-triggered stopping system.