SLOVENSKI STANDARD
oSIST prEN 81-44:2021

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Varnostna pravila za konstruiranje in vgradnjo dvigal (liftov) - Posebna dvigala za prevoz oseb in blaga - 44. del: Dvigala v vetrnih turbinah

Safety rules for the construction and installation of lifts - Special lifts for the transport of persons and goods - Part 44: Lifting appliances in wind turbines

Sicherheitsregeln für die Konstruktion und Installation von Aufzügen - Besondere Aufzüge für den Transport von Personen und Gütern - Teil 44: Aufzüge in Windenergieanlagen

Règles de sécurité pour la construction et l'installation des élévateurs - Applications particulières pour les ascenseurs et les ascenseurs de charge - Partie 44 : Ascenseurs de chantier pour éolienne

Ta slovenski standard je istoveten z: **prEN 81-44**

ICS:

27.180	Vetrne elektrarne	Wind turbine energy systems
91.140.90	Dvigala. Tekoče stopnice	Lifts. Escalators

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Safety rules for the construction and installation of lifts - Special lifts for the transport of persons and goods - Part 44: Lifting appliances in wind turbines

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

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.

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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.

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

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

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European foreword

This document (prEN 81-44:2021) 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.

Introduction

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

This document is of relevance, in particular, for the following stakeholder groups representing the market players with regard to machinery safety:

— machine manufacturers (small, medium and large enterprises);

— health and safety bodies (regulators, accident prevention organizations, market surveillance etc.).

Others can be affected by the level of machinery safety achieved with the means of the document by the above-mentioned stakeholder groups:

— machine users/employers (small, medium and large enterprises);

— machine users/employees (e.g. trade unions, organizations for people with special needs);

— service providers, e.g. for maintenance (small, medium and large enterprises);

— consumers (in case of machinery intended for use by consumers).

The above-mentioned stakeholder groups have been given the possibility to participate at the drafting process of this document.

The machinery 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 which are 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 requirements of this type-C standard.

1 Scope

1.1 This document specifies the safety requirements for the construction and installation of power operated lifting appliances (referred hereafter as a lift) installed permanently for indoor or outdoor service in wind turbines and intended for access to workplaces on wind turbines by competent persons. A lift serves defined landing levels and may move persons to working positions where they are carrying out work (which could be from the carrier) and has a carrier which is:

a) designed for the transportation of persons and goods;

b) guided;

c) travelling vertically or along a path within 15 degrees maximum from the vertical;

d) supported or sustained by rack and pinion or rope traction drive;

e) travelling with a speed not more than 0,7 m/s;

f) operating ambient temperature range between – 25 °C to + 55 °C.

1.2 This document identifies hazards as listed in Clause 4 which arise during the various phases in the life of such equipment and describes methods for the elimination or reduction of these hazards when used as intended by the manufacturer.

1.3 This document does not specify requirements for:

a) operation in severe conditions (e.g. extreme climates, strong magnetic fields);

b) noise;

c) the use of the lift for erection or dismantling of the wind turbine;

d) lightning protection;

e) operation subject to special rules (e.g. potentially explosive atmospheres);

NOTE Directive 2014/34/EU concerning equipment and protective systems intended for use in potentially explosive atmospheres can be applicable to the type of machine or equipment covered by this European Standard. The present standard is not intended to provide means of complying with the essential health and safety requirements of Directive 2014/34/EU.

f) electromagnetic compatibility (emission, immunity);

g) handling of loads the nature of which could lead to dangerous situations;

h) the use of combustion engines;

i) hydraulic and pneumatic drive units;

j) hazards occurring during manufacturing process;

k) the use of lifts in floating wind turbines;

l) the use during earthquakes.

1.4 This document is not applicable to:

a) builders hoists in accordance with EN 12158-1:2000, EN 12158-2:2000 and EN 12159:2000;

b) elevating control stations in accordance with EN 14502-2:2005+A1:2008;

c) lifts in accordance with EN 81-20:2020;

d) work platforms in accordance with EN 280:2013+A1:2015 and EN 1808:2015 and EN 1495:1997+A2:2009;

e) lifts on cranes in accordance with EN 81-43:2009.

This document is not applicable to lifts manufactured 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 81-43:2009, *Safety rules for the construction and installation of lifts — Special lifts for the transport of persons and goods — Part 43: Lifts for cranes*

EN 81-50:2020, *Safety rules for the construction and installation of lifts — Examinations and tests — Part 50: Design rules, calculations, examinations and tests of lift components*

EN ISO 13854:2019, *Safety of machinery — Minimum gaps to avoid crushing of parts of the human body*

EN 795:2012, *Personal fall protection equipment — Anchor devices*

EN 894-1:1997+A1:2008, *Safety of machinery — Ergonomics requirements for the design of displays and control actuators — Part 1: General principles for human interactions with displays and control actuators*

EN 1808:2015, *Safety requirements for suspended access equipment — Design calculations, stability criteria, construction — Examinations and tests*

EN 1991-1-3:2003,[1] *Eurocode 1 — Actions on structures — Part 1-3: General actions — Snow loads*

EN 1993-1-1:2005,[2] *Eurocode 3: Design of steel structures — Part 1-1: General rules and rules for buildings*

EN 10264-1:2012, *Steel wire and wire products — Steel wire for ropes — Part 1: General requirements*

EN 10264-2:2012, *Steel wire and wire products — Steel wire for ropes — Part 2: Cold drawn non alloy steel wire for ropes for general applications*

EN 10264-3:2012, *Steel wire and wire products — Steel wire for ropes — Part 3: Round and shaped non alloyed steel wire for high duty applications*

[1] As impacted by EN 1991-1-3:2003/A1:2005 and EN 1991-1-3:2003/AC:2009.
[2] As impacted by EN 1993-1-1:2005/A1:2014 and EN 1993-1-1:2003/AC:2009.

EN 10264-4:2012, *Steel wire and wire products — Steel wire for ropes — Part 4: Stainless steel wire*

EN 12385-1:2002+A1:2008, *Steel wire ropes — Safety — Part 1: General requirements*

EN 12385-2:2002+A1:2008, *Steel wire ropes — Safety — Part 2: Definitions, designation and classification*

EN 12385-3:2004+A1:2008, *Steel wire ropes — Safety — Part 3: Information for use and maintenance*

EN 12385-4:2002+A1:2008, *Steel wire ropes — Safety — Part 4: Stranded ropes for general lifting applications*

EN 13001-2:2014, *Crane safety — General design — Part 2: Load actions*

EN 13411-1:2002+A1:2008, *Terminations for steel wire ropes — Safety — Part 1: Thimbles for steel wire rope slings*

EN 13411-2:2001+A1:2008, *Terminations for steel wire ropes — Safety — Part 2: Splicing of eyes for wire rope slings*

EN 13411-3:2004+A1:2008, *Terminations for steel wire ropes — Safety — Part 3: Ferrules and ferrule-securing*

EN 13411-4:2011, *Terminations for steel wire ropes — Safety — Part 4: Metal and resin socketing*

EN 13411-5:2003+A1:2008, *Terminations for steel wire ropes — Safety — Part 5: U-bolt wire rope grips*

EN 13411-6:2004+A1:2008, *Terminations for steel wire ropes — Safety — Part 6: Asymmetric wedge socket*

EN 13411-7:2006+A1:2008, *Terminations for steel wire ropes — Safety — Part 7: Symmetric wedge socket*

EN 60204-1:2018, *Safety of machinery — Electrical equipment of machines — Part 1: General requirements*

EN 60529:1991,[3] *Degrees of protection provided by enclosures (IP Code) (IEC 60529:1989)*

EN IEC 60947-4-1:2019, *Low-voltage switchgear and controlgear — Part 4-1: Contactors and motor-starters — Electromechanical contactors and motor-starters (IEC 60947-4-1:2018)*

EN 60947-5-1:2017, *Low-voltage switchgear and controlgear — Part 5-1: Control circuit devices and switching elements — Electromechanical control circuit devices (IEC 60947-5-1:2016)*

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

EN ISO 13849-1:2015, *Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design (ISO 13849-1:2015)*

EN ISO 13850:2015, *Safety of machinery — Emergency stop function — Principles for design (ISO 13850:2015)*

[3] As impacted by EN 60529:1991/AC:2006-12, EN 60529:1991/A1:2000, EN 60529:1991/A2:2013 and EN 60529:1991/A2:2013/AC:2019-02.

EN ISO 13851:2019, *Safety of machinery — Two-hand control devices — Principles for design and selection (ISO 13851:2019)*

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

EN ISO 14119:2013, *Safety of machinery — Interlocking devices associated with guards — Principles for design and selection (ISO 14119:2013)*

EN ISO 14122-3:2016, *Safety of machinery — Permanent means of access to machinery — Part 3: Stairs, stepladders and guard-rails (ISO 14122-3:2016)*

EN ISO 14122-4:2016, *Safety of machinery — Permanent means of access to machinery — Part 4: Fixed ladders (ISO 14122-4:2016)*

ISO 6336-1:2019, *Calculation of load capacity of spur and helical gears — Part 1: Basic principles, introduction and general influence factors*

ISO 6336-2:2019, *Calculation of load capacity of spur and helical gears — Part 2: Calculation of surface durability (pitting)*

ISO 6336-3:2019, *Calculation of load capacity of spur and helical gears — Part 3: Calculation of tooth bending strength*

ISO 6336-5:2016, *Calculation of load capacity of spur and helical gears — Part 5: Strength and quality of materials*

3 Terms and definitions

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 12100:2010, EN 81-43:2009 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

3.1.1
lift
machine with a carrier which is guided and intended for transport between different levels

[SOURCE: EN 81-43:2009, definition 3.1]

3.1.2
base frame
lowest framework of the rack and pinion lift upon which all other components are mounted

[SOURCE: EN 81-43:2009, definition 3.7]

3.1.3
carrier
load carrying unit including floor, walls, gates and roof

[Adapted from EN 81-43:2009, 3.13]

3.1.4
interlocking device
interlock
mechanical, electrical or other type of device, the purpose of which is to prevent the operation of hazardous machine functions under specified conditions (generally as long as a guard is not closed)

[SOURCE: ISO 12100:2010, 3.28.1.]

3.1.5
guard locking device
device intended to lock a guard in the closed position and linked to the control system

Note 1 to entry: Interlocking device [3.1.4] with additional function of keeping the guard locked when the hazardous machine functions are in operation

[SOURCE: EN ISO 14119:2013, 3.4]

3.1.6
landing zone
zone, extending above and below the landing level, in which the carrier floor has to be to enable the corresponding landing door to be unlocked

[Adapted from EN 81-20:2020, 3.63]

3.1.7
competent person
designated person, suitably trained, qualified by knowledge and practical experience, and provided with the necessary instructions to enable the required procedures to be carried out

Note 1 to entry: National regulations may require certification of competence.

[SOURCE: EN 81-43:2009, definition 3.23]

3.1.8
overspeed safety device
mechanical device for stopping and maintaining stationary the carrier in the event of over-speed

3.1.9
fall arrest safety device
mechanical device for stopping and maintaining stationary the carrier in the event of primary wire failure

3.1.10
evacuation
specific actions required to safely release persons entrapped in the carrier without external help

3.1.11
rescue
specific actions required to safely release persons entrapped in the carrier by competent persons

3.1.12
rigid guiding
guiding means where the carrier is guided by rigid rail or profile (e.g. mast guiding or ladder guiding)