



# SLOVENSKI STANDARD SIST EN 81-44:2025

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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 ascenseurs - Applications particulières pour les ascenseurs et les ascenseurs de charge - Partie 44 : Ascenseurs de chantier pour éolienne

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[http](https://standards.iteh.ai) Ta slovenski standard je istoveten z: [7666](https://standards.iteh.ai) EN 81-44:2024 [9e6-5f124f2e2d4a/sist-en-81-44-2025](https://standards.iteh.ai)

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### ICS:

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

**SIST EN 81-44:2025**

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EUROPEAN STANDARD

**EN 81-44**

NORME EUROPÉENNE

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English Version

## 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

Règles de sécurité pour la construction et l'installation  
des ascenseurs - Ascenseurs particuliers destinés au  
transport des personnes et des matériaux -  
Partie 44 : Ascenseurs pour éolienne

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

This European Standard was approved by CEN on 30 June 2024.

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.

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

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## European foreword

This document (EN 81-44:2024) has been prepared by 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 January 2025, and conflicting national standards shall be withdrawn at the latest by January 2025.

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.

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

This document has been prepared under a standardization request addressed to CEN by the European Commission. The Standing Committee of the EFTA States subsequently approves these requests for its Member States.

For the relationship with EU Legislation, see informative Annex ZA, which is an integral part of this document.

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

According to the CEN-CENELEC Internal Regulations, the national standards organisations 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.

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## EN 81-44:2024 (E)

### 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.

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## 1 Scope

**1.1** This document specifies the safety requirements for the construction and installation of power operated lifting appliances installed permanently for indoor or outdoor service in wind turbines and intended for access to workplaces on wind turbines, including rescue and evacuation procedures. A lifting appliance serves defined landing levels and can 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° 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) able to operate in a temperature range between -25 °C to + 55 °C.

**1.2** This document does not cover hazards related to:

- a) noise;
- b) the use of the lifting appliance for erection or dismantling of the wind turbine;
- c) lightning protection;
- d) use in potentially explosive atmospheres;
- e) electromagnetic compatibility (emission, immunity);
- f) transporting of goods outside the carrier;
- g) the use of combustion engines;
- h) hydraulic and pneumatic drive units;
- i) the use of lifting appliances in floating wind turbines;
- j) use during earthquakes.

**1.3** This document is not applicable to lifting appliances manufactured before the date of its publication.

**EN 81-44:2024 (E)****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 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<sup>1</sup>, *Eurocode 1 — Actions on structures — Part 1-3: General actions — Snow loads*

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

EN 10264-2:2021, *Steel wire and wire products — Steel wire for ropes — Part 2: Cold drawn non alloy steel wire for ropes for general applications*

EN 10264-3:2023, *Steel wire and wire products — Steel wire for ropes — Part 3: Round and shaped non alloyed steel wire for high duty applications*

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 12385-3:2020, *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 13001-2:2021, *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*

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<sup>1</sup> As impacted by EN 1991-1-3:2003/A1:2015 and EN 1991-1-3:2003/AC:2009.

- EN 13411-3:2022, *Terminations for steel wire ropes — Safety — Part 3: Ferrules and ferrule-securing*
- EN 13411-4:2021, *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 13411-7:2021, *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 (IEC 60204-1:2016)*
- EN 60529:1991<sup>2</sup>, *Degrees of protection provided by enclosures (IP Code) (IEC 60529:1989)*
- EN IEC 60947-4-1:2019<sup>3</sup>, *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<sup>4</sup>, *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 13849-1:2023, *Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design (ISO 13849-1:2023)*
- EN ISO 13850:2015, *Safety of machinery — Emergency stop function — Principles for design (ISO 13850:2015)*
- EN ISO 13851:2019, *Safety of machinery — Two-hand control devices — Principles for design and selection (ISO 13851:2019)*
- EN ISO 13854:2019, *Safety of machinery — Minimum gaps to avoid crushing of parts of the human body (ISO 13854:2017)*
- 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)*

<sup>2</sup> As impacted by EN 60529:1991/AC:2016-12, EN 60529:1991/A1:2000, EN 60529:1991/A2:2013 and EN 60529:1991/A2:2013/AC:2019-02.

<sup>3</sup> As impacted by EN IEC 60947-4-1:2019/AC:2021-04 and EN IEC 60947-4-1:2019/AC:2020-05.

<sup>4</sup> As impacted by EN 60947-5-1:2017/AC:2020-05.

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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, definitions, symbols and abbreviated terms****3.1 Terms and definitions**

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

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

- IEC Electropedia: available at <https://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

**3.1.1****lifting appliance**

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

**3.1.2****base frame**

lowest framework of the rack and pinion lifting appliance upon which all other components are mounted

[SOURCE: EN 81-43:2009, definition 3.7, modified – term “rack and pinion” added, term “lift” replaced with “lifting appliance”]

**3.1.3****carrier**

load carrying unit including floor, walls, doors and roof

[SOURCE: EN 81-43:2009, 3.13, definition modified]

**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: EN 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**

level in the wind turbine intended for loading and unloading the carrier (3.1.3)

[SOURCE: EN 81-43:2009, 3.21, modified]

### 3.1.7

#### **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

### 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 device**

mechanical device for stopping and maintaining stationary the carrier in the event of drive wire rope 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

### 3.1.12

#### **rigid guiding**

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

### 3.1.13

#### **mast guiding**

structure that supports and guides the carrier

### 3.1.14

#### **ladder guiding**

ladder that guides the carrier and that can be used for climbing

### 3.1.15

#### **obstruction detection device**

protective equipment detecting obstacles during the travel of the carrier (i.e. persons or objects)

**EN 81-44:2024 (E)****3.1.16****working load limit****WLL**

maximum load that a drive unit, fall arrest device and/or an overspeed safety device is authorized to sustain as designated by the manufacturer

**3.1.17****rated load** **$m_H$** 

load of persons and/or equipment that a lifting appliance has been designated to carry by the manufacturer in normal use

**3.1.18****traction hoist drive**

assembly through which a wire rope is conveyed as a result of friction between the wire rope and the traction assembly with no tail load

**3.1.19****rope guiding**

guiding by means of tensioned steel wire ropes that prevent the carrier from swinging and rotating while being stationary and during travel

**3.1.20****drive wire rope**

active wire rope carrying the suspended load

**3.1.21****secondary wire rope**

wire rope not normally carrying the suspended load but rigged to work in conjunction with a fall arrest device

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**3.1.22****buffer**

resilient stop at the end of travel comprising a means of braking using fluids or springs (or other similar means, e.g. rubber)

**3.1.23****vision panel**

transparent or perforated panel intended to provide a line of sight inside or outside the carrier

**3.1.24****pit**

recessed area, which is part of the liftway and has closed sides and is only accessible from above through the liftway