SLOVENSKI STANDARD
oSIST prEN 17206:2018

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Razvedrilna tehnologija - Oprema za dvigovanje in nošenje bremen za odre in druge prireditvene prostore razvedrilne industrije - Specifikacije splošnih zahtev (razen za aluminijaste in jeklene traverze in stebre)

Entertainment Technology - Lifting and Load-bearing Equipment for Stages and other Production Areas within the Entertainment Industry - Specifications for general requirements (excluding aluminum and steel trusses and towers)

Veranstaltungstechnik - Hub- und Lastaufnahmeeinrichtungen für Bühnen und andere Produktionsbereiche in der Veranstaltungsindustrie - Festlegung von grundlegenden Anforderungen (mit Ausnahme von Aluminium- und Stahltraversen)

Ta slovenski standard je istoveten z: **prEN 17206**

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97.200.10	Gledališka, odrska in studijska oprema ter delovne postaje	Theatre, stage and studio equipment

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EUROPEAN STANDARD

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Will supersede CWA 15902-1:2008

English Version

Entertainment Technology - Lifting and Load-bearing Equipment for Stages and other Production Areas within the Entertainment Industry - Specifications for general requirements (excluding aluminum and steel trusses and towers)

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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 433.

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: Avenue Marnix 17, B-1000 Brussels

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European foreword

This document (prEN 17206:2017) has been prepared by Technical Committee CEN/TC 433 “Entertainment Technology - Machinery, equipment and installations”, the secretariat of which is held by DIN.

This document is currently submitted to the CEN Enquiry.

This document will supersede CEN/CWA 15902-1:2008.

This document differs from CWA 15902-1:2008 mainly as follows:

a) evaluated and revised according to new European Standards, Directives and Regulations;

b) Terms and Definitions have been revised;

c) updated examples and informative Annexes; and

d) Standard revised editorial.

Introduction

The purpose of this document is to produce European specifications for the design, manufacture and installation of lifting and load bearing equipment within the entertainment industry. It is intended to provide common specifications for national and international (travelling) performances, performers, technicians and manufacturers. Apart from the Machinery Directive, the Council Directive 2009/104/EC concerning the minimum safety and health requirements for the use of work equipment by workers at work states in Annex II:

"3.1.3.

Measures must be taken to ensure that workers are not present under suspended loads, unless such presence is required for the effective operation of the work

Loads may not be moved above unprotected workplaces usually occupied by workers.

Where that is the case, if work cannot be carried out properly any other way, appropriate procedures must be laid down and applied."

This document considers situations that give rise to danger, such as moving or holding scenery or equipment:

a) over persons and/or unprotected areas

b) in areas with low light conditions, limited visibility, while using stage fog and other masking effects.

These additional situations apply not only during performances, but also during rehearsals, technical set-up, preparations, installations and other situations. This document covers these hazards and suggests appropriate procedures to maintain safety.

1 Scope

This document applies to machinery, machinery installations and machinery control systems used in places of assembly and in staging and production facilities for events and theatrical productions (stage machinery, for short). Such facilities include: theatres, multi-purpose halls, exhibition halls; film, television and radio studios; concert halls, schools, bars, discotheques, open-air stages and other rooms for shows and events.

The document applies to machinery installations with guided or unguided load bearing and load carrying equipment.

This document covers machinery used in the entertainment industry including machinery that is excluded from the Machinery Directive (2006/42/EC) specifically Article 1 2j which excludes "*machinery intended to move performers during artistic performances*".

For the purposes of this document, machinery installations are all technical installations and equipment used for operations in stage and production facilities in the entertainment industry. Such installations are used to lift, lower, suspend and carry loads (e.g. scenery, traverse systems, or lighting, film/video and sound equipment). They can also be used to move persons, and persons can stand under such equipment while the loads are at rest or in motion.

This machinery includes Controls, electrical and electronic control systems, electrical and electronic equipment, hydraulic and pneumatic power supplies.

"Stages" are, for example, staging facilities and production areas in theatres, multipurpose halls, studios, production facilities for film, television or radio, concert halls, congress centres, schools, exhibition centres, trade-fair centres, museums, discotheques, amusement parks, sports facilities and open-air-theatres.

"Events" are, for example, concerts, shows, congresses, exhibitions, presentations, demonstrations, film or television recordings, etc.

This document considers permanently and temporarily installed lifting and movement equipment for stages and production areas within the entertainment industry.

This document does not consider the design or control of fire curtains.

Typical applications include but are not limited to the following:

— acoustic doors;

— auditorium elevators;

— compensating elevators;

— cycloramas;

— fly bar systems (manual and motor driven);

— lighting bars;

— movable lighting towers;

— movable stage platforms (stage wagons);

— movable proscenium arches;

— orchestra elevators;

— performer flying;

— point hoists;

— revolving stages and turntables;

— scenery storage elevators;

— side stage and rear stage shutters;

— stage elevators;

— stage wagons (stage trucks);

— tiltable stage floors; and

— trap elevators.

The principles in this document also apply to machinery installations based on new technologies or specially designed installations which are not expressly mentioned here but which nevertheless operate in a similar manner or are meant for similar purposes to the equipment listed above.

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 349, *Safety of machinery - Minimum gaps to avoid crushing of parts of the human body*

EN 818-7, *Short link chain for lifting purposes - Safety - Part 7: Fine tolerance hoist chain, Grade T (Types T, DAT and DT)*

EN 1993-1-10, *Eurocode 3: Design of steel structures - Part 1-10: Material toughness and through-thickness properties*

EN 1999-1-2, *Eurocode 9 - Design of aluminium structures - Part 1-2: Structural fire design*

EN 1090-2, *Execution of steel structures and aluminium structures - Part 2: Technical requirements for steel structures*

EN 1090-3, *Execution of steel structures and aluminium structures - Part 3: Technical requirements for aluminium structures*

EN 10204, *Metallic products - Types of inspection documents*

EN 12385-4, *Steel wire ropes - Safety - Part 4: Stranded ropes for general lifting applications*

EN 13411 (all parts), *Terminations for steel wire ropes – Safety*

EN 13480-3, *Metallic industrial piping - Part 3: Design and calculation*

EN 14492-2, *Cranes - Power driven winches and hoists - Part 2: Power driven hoists*

EN 60034-1, *Rotating electrical machines - Part 1: Rating and performance (IEC 60034-1)*

EN 60204-1:2006, *Safety of machinery - Electrical equipment of machines - Part 1: General requirements (IEC 60204-1:2005)*

EN 60204-32:2008, *Safety of machinery - Electrical equipment of machines - Part 32: Requirements for hoisting machines (IEC 60204-32:2008)*

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

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

EN 61000-6-2, *Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments (IEC 61000-6-2)*

EN 61000-6-4, *Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments (IEC 61000-6-4)*

EN 61326-3-1, *Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 3-1: Immunity requirements for safety-related systems and for equipment intended to perform safety-related functions (functional safety) - General industrial applications (EN 61326-3-1)*

EN 61439-1, *Low-voltage switchgear and controlgear assemblies - Part 1: General rules (IEC 61439-1)*

EN 61508 (all parts), *Functional safety of electrical/electronic/programmable electronic safety-related systems (IEC 61508)*

EN 62061, *Safety of machinery - Functional safety of safety-related electrical, electronic and programmable electronic control systems (IEC 62061)*

EN 81346-1, *Industrial systems, installations and equipment and industrial products - Structuring principles and reference designations - Part 1: Basic rules (IEC 81346-1)*

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 13849-2, *Safety of machinery - Safety-related parts of control systems - Part 2: Validation (ISO 13849-2)*

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

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

3 Terms and definitions

For the purposes of this document, the following terms and definitions 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 http://www.iso.org/obp

3.1 General terms

3.1.1
competent person
person with sufficient practical and theoretical knowledge and experience to carry out the person's duties, and who is aware of the limits of the person's competency, expertise and knowledge

3.1.2
design load
load to be used for calculation/validation of a specific component according to the standards and the technical literature applicable for the specific component; obtained by multiplying the characteristic load (or the load at failure, depending on the specific condition being considered) of the component by the design risk coefficient (specific to the same component)

3.1.3
drive system
part of a load bearing machine that executes movement and holding of the load and which converts energy into movement

3.1.4
emergency stop
device that causes a controlled stop as quickly and as safely as possible and which overrides all other controls

3.1.5
failure
termination of the ability of an item to perform a required function

Note 1 to entry: After failure the item has a fault.

Note 2 to entry: "Failure" is an event, as distinguished from "fault", which is a state.

Note 3 to entry: This concept as defined does not apply to items consisting of software only.

Note 4 to entry: In practice the terms "failure" and "fault" are often used synonymously.

[SOURCE: IEV 191-04-01]

3.1.6
fault
state of an item characterised by inability to perform a required function, excluding the inability during preventive maintenance or other planned actions, or due to lack of external resources

Note 1 to entry: A fault is often the result of a failure of the item itself, but may exist without prior failure.Note 2 to entry: "Failure" is an event, as distinguished from "fault", which is a state.

Note 2 to entry: In the field of machinery, the English term "fault" is commonly used in accordance with the definition in IEV 191-05-01, whereas the French term "défaut" and the German term "Fehler" are used rather than the terms "Panne" and "Fehlzustand" that appear in the IEV with this definition.

Note 3 to entry: In practice, the terms "fault" and "failure" are often used synonymously.

[SOURCE: EN ISO 12100:2010, 3.33]