Entertainment technology - Machinery for stages and other production areas - Safety requirements and inspections

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 17206:2020 sisaldab Euroopa standardi EN 17206:2020 ja selle paranduse AC:2021 ingliskeelset teksti.	This Estonian standard EVS-EN 17206:2020 consists of the English text of the European standard EN 17206:2020 and its corrigendum AC:2021.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas. Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 13.05.2020.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation. Date of Availability of the European standard is 13.05.2020.
Parandusega AC lisatud või muudetud teksti algus ja lõpp on tekstis tähistatud sümbolitega ▌AC〉 〈AC▐. Standard on kättesaadav Eesti Standardimis-ja Akrediteerimiskeskusest.	The start and finish of text introduced or altered by corrigendum AC is indicated in the text by tags ▌AC〉 〈AC▐. The standard is available from the Estonian Centre for Standardisation and Accreditation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

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English Version

Entertainment technology - Machinery for stages and other production areas - Safety requirements and inspections

Technologies du spectacle - Machinerie pour scènes et autres zones de production - Exigences et inspections relatives à la sécurité

Veranstaltungstechnik - Maschinen für Bühnen und andere Produktionsbereiche - Sicherheitstechnische Anforderungen und Prüfungen

This European Standard was approved by CEN on 7 March 2020.

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

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European foreword

This document (EN 17206:2020) has been prepared by Technical Committee CEN/TC 433 "Entertainment Technology – Machinery, equipment and installations", the secretariat of which is held by DIN.

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 November 2020, and conflicting national standards shall be withdrawn at the latest by November 2020.

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 supersedes 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;

d) standard revised editorially.

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, Turkey and the United Kingdom.

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. Apart from the Machinery Directive, the Council Directive 2009/104/EC of 16 September 2009 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, for example while using stage fog and other masking effects.

These 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.

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.

"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 of this document 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 proscenium arches;

— orchestra elevators;

— performer flying systems;

— point hoists;

— revolving stages and turntables;

— scenery storage elevators;

— side stage and rear stage shutters;

— stage elevators;

— stage wagons;

— tiltable stage floors;

— trap elevators.

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 loads.

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

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

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 818-1, *Short link chain for lifting purposes — Safety — Part 1: General conditions of acceptance*

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

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

EN 1999-1-1, *Eurocode 9: Design of aluminium structures — Part 1-1: General structural rules*

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

EN 12385-1, *Steel wire ropes — Safety — Part 1: General requirements*

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

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

EN 12385-5, *Steel wire ropes — Safety — Part 5: Stranded ropes for lifts*

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

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

EN 14492-1, *Cranes — Power driven winches and hoists — Part 1: Power driven winches*

EN 14492-2:2019, *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 60204-1:2018, *Safety of machinery — Electrical equipment of machines — Part 1: General requirements (IEC 60204-1:2016)*

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 (IEC 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 (IEC 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 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 62061:2005, *Safety of machinery — Functional safety of safety-related electrical, electronic and programmable electronic control systems (IEC 62061:2005)*

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

EN 82079-1, *Preparation of instructions for use — Structuring, content and presentation — Part 1: General principles and detailed requirements (IEC/IEEE 82079-1)*

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)*

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

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 https://www.iso.org/obp/ui

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

Note 1 to entry: See Figure 2 c), Figure 3 c) and Figure 4 c).

3.1.3
emergency stop
emergency stop function
E-stop
function which is intended to

— avert arising or reduce existing hazards to persons, damage to machinery or to work in progress, and

— be initiated by a single human action

Note 1 to entry: ISO 13850 gives detailed provisions.

[SOURCE: EN ISO 12100:2010, 3.40 – modified: Term "E-Stop" added]

3.1.4
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.