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Railway applications - Track - Road-rail machines and associated equipment - Part 2: General safety requirements

Bahnanwendungen - Oberbau - Zweiwege-Maschinen und zugehörige Ausrüstungen - Teil 2: Allgemeine Sicherheitsanforderungen

Applications ferroviaires - Voie - Machines rail-route et équipements associés - Partie 2 : Exigences générales pour la sécurité

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Bahnanwendungen - Oberbau - Zweiwege-Maschinen und zugehörige Ausrüstungen - Teil 2: Allgemeine Sicherheitsanforderungen

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European foreword

This document (FprEN 15746-2:2019) has been prepared by Technical Committee CEN/TC 256 “Railway applications”, the secretariat of which is held by DIN.

This document is currently submitted to the Unique Acceptance Procedure.

This document will supersede EN 15746-2:2010+A1:2011.

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.

EN 15746, *Railway applications — Track — Road-rail machines and associated equipment*, is currently composed with the following parts:

— *Part 1: Technical requirements for travelling and working*;

— *Part 2: General safety requirements*;

— *Part 3: Technical requirements for running*;

— *Part 4: Technical requirements for running, travelling and working on urban rail*.

Introduction

This document is the second of a series of four parts of the European Standard: *Railway applications — Track — Road-rail machines and associated equipment*, dealing with railway specific risks of the road-rail machines when running, travelling and working on railway infrastructures:

— Part 1 covers the technical requirements for the machines in working and travelling modes, and is applicable for all machines.

— Part 2 covers the safety requirements for the machines in working and travelling modes; this is a document harmonized with the European Machinery Directive 2006/42/EC.

— Part 3 covers the essential requirements for the machines that have a running mode and run on tracks within the scope of the Railway Directive 2007/58/EC; this is a document harmonized with the Railway Interoperability Directive 2008/57/EC and its associated Technical Specifications for Interoperability (TSI).

— Part 4 covers the technical requirements for the machines intended to have working, travelling and/or running mode on urban rail.

Part 1 defines requirements for approval of the machine for use on the railway., Depending on the decision of the Infrastructure Manager or National rules the assessment of conformance could be by the Infrastructure Manager concerned, by a third party assessor or declaration of conformity by the manufacturer.

Part 2 defines requirements for the machine to be declared conformant by the manufacturer, except in the case of machines classified under Annex 4 of the Machinery Directive, which require a conformity check in conjunction with a notified body.

Part 3 defines requirements for running on the European railway network. Assessment of conformity is by a notified body as prescribed in the Railway Interoperability Directive.

Part 4 defines requirements for approval of the machine for use on urban rail. Depending on the decision of the Urban Rail Manager or National rules the assessment of conformance could be by the Urban Rail Manager concerned, by a third party assessor or declaration of conformity by the manufacturer.

This European Standard is a type C standard as stated in EN ISO 12100. 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 in the drafting process of this document.

The machinery concerned and the extent to which hazards, hazardous situations and hazardous events are covered are indicated in the scope of this European Standard.

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

As far as possible this European Standard sets out only the requirements that materials and equipment need to meet in the interest of safety, and it is assumed that persons operating machines are adequately trained.

1 Scope

1.1 General

This document specifies the significant hazards, hazardous situations and events, common to self-propelled road-rail machines – henceforward referred to as machines – and associated equipment, arising due to the adaptation for their use on railway networks and urban rail networks. These machines are intended for construction, maintenance and inspection of the railway infrastructure, shunting and emergency rescue vehicles, when they are used as intended and under conditions of misuse which are reasonably foreseeable by the manufacturer; see Clause 4.

This document deals with the common hazards during assembly and installation, commissioning, travelling on and off track, use including setting, programming, and process changeover, operation, cleaning, fault finding, maintenance and de-commissioning of the machines.

NOTE Specific measures for exceptional circumstances are not dealt with in this document. They can be subject to negotiation between manufacturer and the machine operator.

The common hazards dealt with include the general hazards presented by the machines, also the hazards presented by the following specific machine functions:

a) excavation;

b) ballast tamping, ballast cleaning, ballast regulating, ballast consolidating;

c) track construction, renewal, maintenance and repair;

d) lifting;

e) overhead contact line system renewal / maintenance;

f) maintenance of the components of the infrastructure;

g) inspection and measurement of the components of the infrastructure;

h) working in tunnels;

i) shunting;

j) vegetation control;

k) emergency rescue and recovery;

during commissioning, use, maintenance and servicing.

For a road-rail machine it is assumed that an EU road permissible host vehicle will offer an accepted safety level for its designed basic functions before conversion. Unless explicitly stated otherwise in a particular clause this specific aspect is not dealt with in this European Standard.

This document does not deal with:

1) requirements with regard to the quality of work and the performance of the machine;

2) machines that utilize the contact line system for traction purposes;

3) specific requirements established by a railway Infrastructure Manager or Urban Rail Manager;

4) negotiations between the manufacturer and the machine operator for additional or alternative requirements;

5) requirements for use and travel of the machine on public highway;

6) hazards due to air pressure caused by the passing of high-speed trains at more than 190 km/h;

7) requirements which could be necessary in case of use in extreme conditions, such as extreme ambient temperatures (tropical or polar); see 5.30;

8) highly corrosive or contaminating environment, e.g. due to the presence of chemicals;

9) potentially explosive atmospheres.

Other special machines used on railway tracks are dealt with in other European Standards, see Annex E.

1.2 Validity of this document

This document applies to all machines that are ordered one year after the publication date by CEN of this document.

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 2, *Classification of fires*

EN 3-7, *Portable fire extinguishers — Part 7: Characteristics, performance requirements and test methods*

EN 280:2013+A1:2015, *Mobile elevating work platforms — Design calculations — Stability criteria — Construction — Safety — Examinations and tests*

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

EN 403, *Respiratory protective devices for self-rescue — Filtering devices with hood for escape from fire — Requirements, testing, marking*

EN 474 (all parts), *Earth-moving machinery — Safety*

EN 474-1:2006+A4:2013, *Earth-moving machinery — Safety — Part 1: General requirements*

EN 547-1, *Safety of machinery — Human body measurements — Part 1: Principles for determining the dimensions required for openings for whole body access into machinery*

EN 547-2, *Safety of machinery — Human body measurements — Part 2: Principles for determining the dimensions required for access openings*

EN 547-3, *Safety of machinery — Human body measurements — Part 3: Anthropometric data*

EN 614-1, *Safety of machinery — Ergonomic design principles — Part 1: Terminology and general principles*

EN 614-2, *Safety of machinery — Ergonomic design principles — Part 2: Interactions between the design of machinery and work tasks*

EN 618, *Continuous handling equipment and systems — Safety and EMC requirements for equipment for mechanical handling of bulk materials except fixed belt conveyors*

EN 619, *Continuous handling equipment and systems — Safety and EMC requirements for equipment for mechanical handling of unit loads*

EN 620, *Continuous handling equipment and systems — Safety and EMC requirements for fixed belt conveyors for bulk materials*

EN 842, *Safety of machinery — Visual danger signals — General requirements, design and testing*

EN 894-1, *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 894-2, *Safety of machinery — Ergonomics requirements for the design of displays and control actuators — Part 2: Displays*

EN 894-3, *Safety of machinery — Ergonomics requirements for the design of displays and control actuators — Part 3: Control actuators*

EN 981, *Safety of machinery — System of auditory and visual danger and information signals*

CR 1030-1, *Hand-arm vibration — Guidelines for vibration hazards reduction — Part 1: Engineering methods by design of machinery*

EN 1032, *Mechanical vibration — Testing of mobile machinery in order to determine the vibration emission value*

EN 1037:1995+A1:2008, *Safety of machinery — Prevention of unexpected start-up*

EN 1837, *Safety of machinery — Integral lighting of machines*

EN 12999, *Cranes — Loader cranes*

EN 13000, *Cranes — Mobile cranes*

EN 13135, *Cranes — Safety — Design — Requirements for equipment*

EN 14033-1:2017, *Railway applications — Track — Railbound construction and maintenance machines — Part 1: Technical requirements for running*

EN 14033-2:2017, *Railway applications — Track — Railbound construction and maintenance machines — Part 2: Technical requirements for travelling and working*

EN 14033-3:2017, *Railway applications — Track — Railbound construction and maintenance machines — Part 3: General safety requirements*

EN 15153-2, *Railway applications — External visible and audible warning devices for trains — Part 2: Warning horns*