SLOVENSKI STANDARD
oSIST prEN 50119:2017

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Železniške naprave - Stabilne naprave električne vleke - Kontaktni vodniki električne vleke

Railway applications - Fixed installations - Electric traction overhead contact lines

Bahnanwendungen - Ortsfeste Anlagen - Oberleitungen für den elektrischen Zugbetrieb

Applications ferroviaires - Installations fixes - Lignes aériennes de contact pour la traction électrique

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29.280 Električna vlečna oprema Electric traction equipment

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English Version

Railway applications - Fixed installations - Electric traction overhead contact lines

Applications ferroviaires - Installations fixes - Lignes aériennes de contact pour la traction électrique

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This draft European Standard is submitted to CENELEC members for enquiry.
Deadline for CENELEC: 2017-10-27.

It has been drawn up by CLC/SC 9XC.

If this draft becomes a European Standard, CENELEC 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.

This draft European Standard was established by CENELEC in three official versions (English, French, German).
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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 Electrotechnical Standardization
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European foreword

This document has been prepared by CLC/SC 9XC, “Electric supply and earthing systems for public transport equipment and ancillary apparatus (fixed installations) of CLC/TC 9X “Electrical and electronic applications for railways”.

It is currently submitted to the Enquiry.

This document will supersede EN 50119:2009.

The following dates are proposed:

• latest date by which the existence of this document has to be announced at national level	(doa)	dor + 6 months
• latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	dor + 12 months
• latest date by which the national standards conflicting with this document have to be withdrawn	(dow)	dor + 36 months (to be confirmed or modified when voting)

This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For the relationship with EU Directive(s) 2008/57/EC, see informative Annex ZZ, which is an integral part of this document.

1 Scope

This European Standard applies to electric traction overhead contact line systems in heavy railways, light railways, trolley busses and industrial railways of public and private operators.

It applies to new installations of overhead contact line systems and for the complete reconstruction of existing overhead contact line systems.

This standard contains the requirements and tests for the design of overhead contact lines, requirements for structures and their structural calculations and verifications as well as the requirements and tests for the design of assemblies and individual parts.

This standard does not provide requirements for conductor rail systems where the conductor rails are located adjacent to the running rails.

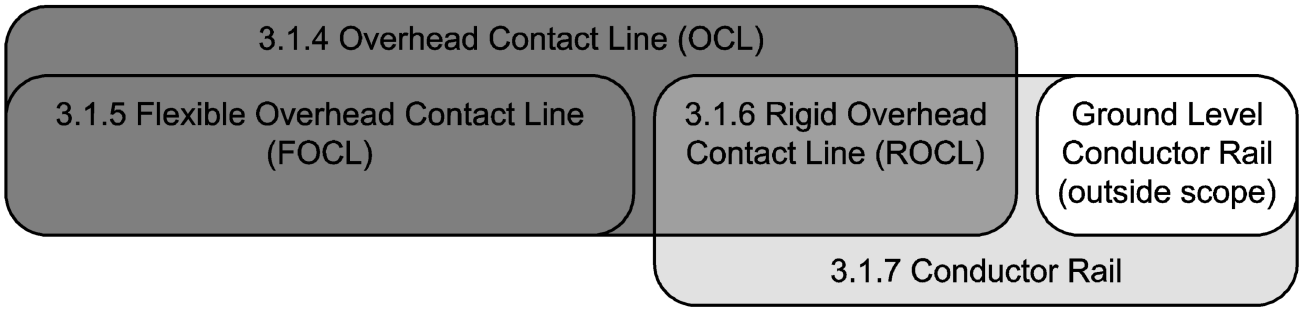

Figure 1 — Scope of Overhead Contact Line

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.

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EN 50121-2:2017, *Railway applications – Electromagnetic compatibility – Part 2: Emission of the whole railway system to the outside world*

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EN 50123 (all parts), *Railway applications – Fixed installations – D.C. switchgear*

EN 50124 (all parts), *Railway applications – Insulation coordination*

EN 50125-2:2002, *Railway applications - Environmental conditions for equipment - Part 2: Fixed electrical installations*

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EN 50152 (all parts), *Railway applications - Fixed installations - Particular requirements for alternating current switchgear*

EN 50163:2004, *Railway applications - Supply voltages of traction systems*

EN 50182:2001, *Conductors for overhead lines - Round wire concentric lay stranded conductors*

EN 50206-1:2010, *Railway applications - Rolling stock - Pantographs: Characteristics and tests - Part 1: Pantographs for main line vehicles*

EN 50206-2:2010, *Railway applications - Rolling stock - Pantographs: Characteristics and tests - Part 2: Pantographs for metros and light rail vehicles*

EN 50317:2012, *Railway applications - Current collection systems - Requirements for and validation of measurements of the dynamic interaction between pantograph and overhead contact line*

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EN 60071 (all parts), *Insulation co-ordination (IEC 60071, all parts)*

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EN 60672 (all parts), *Ceramic and glass insulating materials (IEC 60672, all parts)*

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IEC 60050-811:1991, *International Electrotechnical Vocabulary - Chapter 811: Electric traction*

IEC 60273:1990, *Characteristics of indoor and outdoor post insulators for systems with nominal voltages greater than 1000 V*

IEC/TS 61245:2015, *Artificial pollution tests on high-voltage ceramic and glass insulators to be used on d.c. systems*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60050-811 and the following apply.

3.1 Systems

3.1.1
contact line system
support network for supplying electrical energy from substations to electrically powered traction units, which covers both flexible and rigid overhead contact line systems; the electrical limits of which being the feeding point and the contact point to the current collector

Note 1 to entry The mechanical system may comprise:

- the contact line;
- structures and foundations;
- supports and any components supporting or registering the conductors;
- head and cross spans;
- tensioning devices;
- along-track feeders, reinforcing feeders, and other lines like earth wires and return conductors as far as they are supported from contact line system structures;
- disconnectors;
- over-voltage protection devices;
- conductors connected permanently to the contact line for supply of other electrical equipment such as lights, signal operation, point control and point heating;
- any other equipment necessary for operating the contact line.

3.1.2
contact line
conductor system for supplying traction units with electrical energy via current-collection equipment

Note 1 to entry This includes all current-collecting conductors and conducting rails or bars, including the following:

— reinforcing feeders;
— cross-track feeders;
— electrical connectors;
— sectioning devices;
— supports that are not insulated from the conductors;
— insulators connected to live parts;
— catenary wires;
— auxiliary catenary wires;
— stitch wires;
— droppers;

but excluding other conductors, such as the following:

— along-track feeders;
— earth wires and return conductors.

3.1.3
overhead contact line system
contact line system using an overhead contact line to supply current for use by traction units

3.1.4
overhead contact line
contact line placed above or beside the upper limit of the vehicle gauge, supplying vehicles with electrical energy via roof-mounted current collection equipment

Note 1 to entry: The overhead contact line may be of a flexible or rigid configuration.

3.1.5
flexible overhead contact line
flexible metallic conductor intended to interface with a vehicle mounted current collector

Note 1 to entry: The flexible overhead line may be a contact line with catenary suspension (IEC 60050–811–33–05) or a single tramway equipment (IEC 60050–811–33–03).

3.1.6
rigid overhead contact line
rigid overhead contact line, of simple or composite section, mounted above or beside the upper limit of the vehicle gauge, supplying traction units with electrical energy via roof-mounted current collection equipment

Note 1 to entry: In this standard rigid overhead contact line is used to define conductor rail (3.1.7) mounted in an overhead position.

3.1.7
conductor rail
rigid metallic conductor mounted on insulators intended to interface with a vehicle mounted current collector

Note 1 to entry: See also IEC 60050-811-34-01.

Note 2 to entry: The conductor rail may be mounted in a variety of positions including at ground level or overhead.

Note 3 to entry: The conductor rail may be of composite construction.

3.1.8
supporting assembly
assembly of components attached to the main support structure that supports and registers the overhead contact line

3.1.9
static load gauge
maximum cross-sectional profile of the vehicles using the railway line

3.1.10
kinematic load gauge
static load gauge enlarged to allow for dynamic movements of the vehicle, e.g. suspension travel and bounce

3.1.11
kinematic envelope
kinematic load gauge further enlarged to allow for possible tolerances in the position of the track

3.1.12
swept envelope
kinematic envelope enlarged to allow for centre and end throw of the vehicles on horizontal and vertical curves

3.1.13
tensioning device
device to maintain the tension of conductors within the system design parameters

3.1.14
urban mass transportation system
light rail, trolleybus and tramway system, operating in urban areas, excluding heavy rail systems

3.2 Conductors

3.2.1
along-track feeder
overhead conductor mounted on the same structure as the overhead contact line to supply successive feeding points

3.2.2
catenary wire
longitudinal conductor supporting the contact wire or wires either directly or indirectly

3.2.3
reinforcing feeder
overhead conductor mounted adjacent to the overhead contact line, and directly connected to it at frequent intervals, in order to increase the effective cross sectional area of the overhead contact line

3.3 Electrical

3.3.1
nominal voltage
voltage by which an installation or part of an installation is designated

Note 1 to entry The voltage of the contact line may differ from the nominal voltage by a quantity within permitted tolerances given in EN 50163.

3.3.2
feeding section
electrical section of the route fed by individual track feeder circuit breakers within the area supplied by the substation