



**NSAI**  
Standards

Standard Recommendation  
S.R. CLC/TS 50562:2011

# Railway applications - Fixed installations - Process, measures and demonstration of safety for electric traction systems

## S.R. CLC/TS 50562:2011

*Incorporating amendments/corrigenda issued since publication:*

The National Standards Authority of Ireland (NSAI) produces the following categories of formal documents:

I.S. xxx: Irish Standard – national specification based on the consensus of an expert panel and subject to public consultation.

S.R. xxx: Standard Recommendation - recommendation based on the consensus of an expert panel and subject to public consultation.

SWiFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

<i>This document replaces:</i>	<i>This document is based on:</i> CLC/TS 50562:2011	<i>Published:</i> 19 August, 2011
This document was published under the authority of the NSAI and comes into effect on:  23 August, 2011		ICS number: 29.280
<b>NSAI</b> 1 Swift Square, Northwood, Santry Dublin 9	T +353 1 807 3800 F +353 1 807 3838 E standards@nsai.ie  W NSAI.ie	<b>Sales:</b> T +353 1 857 6730 F +353 1 857 6729 W standards.ie
Údarás um Chaighdeáin Náisiúnta na hÉireann		

TECHNICAL SPECIFICATION  
SPÉCIFICATION TECHNIQUE  
TECHNISCHE SPEZIFIKATION

**CLC/TS 50562**

August 2011

ICS 29.280

English version

**Railway applications -  
Fixed installations -  
Process, measures and demonstration of safety for electric traction  
systems**

Applications ferroviaires -  
Installations fixes -  
Processus, mesures et démonstration de  
la sécurité pour les installations fixes de  
traction électrique

Bahnanwendungen -  
Ortsfeste Anlagen -  
Prozess, Maßnahmen und  
Nachweisführung für die Sicherheit in der  
Bahnstromversorgung

This Technical Specification was approved by CENELEC on 2011-05-24.

CENELEC members are required to announce the existence of this TS in the same way as for an EN and to make the TS available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

**CENELEC**

European Committee for Electrotechnical Standardization  
Comité Européen de Normalisation Electrotechnique  
Europäisches Komitee für Elektrotechnische Normung

**Management Centre: Avenue Marnix 17, B - 1000 Brussels**

## Contents

<b>Foreword</b> .....	<b>4</b>
<b>1 Scope</b> .....	<b>5</b>
<b>2 Normative references</b> .....	<b>5</b>
<b>3 Terms and definitions</b> .....	<b>7</b>
<b>4 Safety process</b> .....	<b>9</b>
4.1 General.....	9
4.2 System definition.....	11
4.3 Hazard identification.....	11
4.4 Risk assessment.....	12
4.5 Measures .....	12
4.6 Evaluation .....	12
4.7 Demonstration of safety .....	12
<b>5 Generic risk assessment</b> .....	<b>13</b>
<b>6 System definition</b> .....	<b>13</b>
6.1 Electric traction system .....	14
6.2 Substations and switching stations .....	14
6.3 Contact line system.....	16
6.4 Return circuit.....	16
6.5 Interfaces of the electric traction system.....	17
6.6 Interfaces to substations and switching stations.....	17
6.7 Interfaces to contact line system.....	18
6.8 Interfaces to return circuit.....	19
<b>7 Hazard identification</b> .....	<b>20</b>
<b>8 Measures</b> .....	<b>20</b>
8.1 General.....	20
8.2 Substations and switching stations .....	21
8.3 Contact line system.....	22
8.4 Return circuit.....	22
<b>9 Safety evaluation for the reference system</b> .....	<b>22</b>
<b>Annex A (informative) Hazard log resulting from the generic risk assessment</b> .....	<b>24</b>
A.1 General.....	24
A.2 Risk assessment process .....	24
A.3 Hazard Log.....	26
<b>Annex B (informative) Abbreviations and acronyms</b> .....	<b>42</b>
<b>Annex C (informative) Documents and standards correlated to this document</b> .....	<b>43</b>
<b>Bibliography</b> .....	<b>47</b>

**Figures**

Figure 1 – Safety process for conventional electric traction system..... 10  
Figure 2 – Electric traction system and its interfaces ..... 14

**Tables**

Table 1 – List of foreseeable top-level hazards and accidents..... 11  
Table A.1 – List of foreseeable top-level hazards and accidents ..... 25  
Table A.2 – Fields of hazard log ..... 26  
Table A.3 – Substations and switching stations ..... 27  
Table A.4 – Control and protection, hardware components ..... 28  
Table A.5 – Control and protection, software..... 31  
Table A.6 – Contact system..... 33  
Table A.7 – Return circuit..... 36  
Table A.8 – Standards referenced in hazard log ..... 37  
Table B.1 – Abbreviations and acronyms ..... 42  
Table C.1 – List of correlated documents and standards ..... 43

## **Foreword**

This Technical Specification was prepared by SC 9XC, Electric supply and earthing systems for public transport equipment and ancillary apparatus (Fixed installations), of Technical Committee CENELEC TC 9X, Electrical and electronic applications for railways.

It was circulated for vote in accordance with the Internal Regulations, Part 2, Subclause 11.3.3.3 and was approved by CENELEC as CLC/TS 50562 on 2011-05-24.

The following date is proposed:

- latest date by which the existence of the CLC/TS  
has to be announced at national level (doa) 2011-11-24

---

## **1 Scope**

This Technical Specification defines the process, measures and demonstration of safety for the electric traction systems of

- railways,
- guided mass transport systems,
- trolleybus systems.

The systems can be elevated, at-grade and underground.

It does not apply to

- underground mine traction systems,
- cranes, transportable platforms and similar transportation equipment on rails, temporary structures (e.g. exhibition structures) in so far as these are not supplied directly or via transformers from the contact line system and are not endangered by the traction power supply system,
- suspended cable cars,
- funicular railways,
- magnetic levitated systems,
- railways with inductive power supply without contact system,
- railways with buried contact system that is required to be energised only below the train to ensure safety,

but it can support the safety considerations of such systems as far as applicable.

This Technical Specification refers to standards and common practice to demonstrate safety including the functional aspects.

This Technical Specification applies to the erecting of new lines and to all significant changes of existing lines.

## **2 Normative references**

The following referenced documents are indispensable for the application 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 50110 (all parts), *Operation of electrical installations*

EN 50119:2009, *Railway applications – Fixed installations – Electric traction overhead contact lines*

EN 50122 (all parts), *Railway applications – Fixed installations – Electrical safety, earthing and the return circuit*

EN 50122-1:2011, *Railway applications – Fixed installations – Electrical safety, earthing and the return circuit – Part 1: Protective provisions against electric shock*

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

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

This is a free preview. Purchase the entire publication at the link below:

[Product Page](#)

- 
- [Looking for additional Standards? Visit Intertek Inform Infostore](#)
  - [Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation](#)
-