Irish Standard
I.S. EN 50126-1:2017

Railway Applications - The Specification and Demonstration of Reliability, Availability, Maintainability and Safety (RAMS) - Part 1: Generic RAMS Process

I.S. EN 50126-1:2017

Incorporating amendments/corrigenda/National Annexes issued since publication:

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NSAI	T +353 1 807 3800	Sales:
1 Swift Square,	F +353 1 807 3838	T +353 1 857 6730
Northwood, Santry	E standards@nsai.ie	F +353 1 857 6729
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National Foreword

I.S. EN 50126-1:2017 is the adopted Irish version of the European Document EN 50126-1:2017, Railway Applications - The Specification and Demonstration of Reliability, Availability, Maintainability and Safety (RAMS) - Part 1: Generic RAMS Process

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EUROPEAN STANDARD

NORME EUROPÉENNE

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EN 50126-1

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Supersedes EN 50126-1:1999

English Version

Railway Applications - The Specification and Demonstration of Reliability, Availability, Maintainability and Safety (RAMS) - Part 1: Generic RAMS Process

Applications ferroviaires - Spécification et démonstration de la fiabilité, de la disponibilité, de la maintenabilité et de la sécurité (FDMS) - Partie 1: Processus FMDS générique

Bahnanwendungen - Spezifikation und Nachweis von Zuverlässigkeit, Verfügbarkeit, Instandhaltbarkeit und Sicherheit (RAMS) - Teil 1: Generischer RAMS Prozess

This European Standard was approved by CENELEC on 2017-07-03. 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.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

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 CENELEC 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 Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

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Contents

Page

European foreword

This document (EN 50126-1:2017) has been prepared by CLC/TC 9X "Electrical and electronic applications for railways".

The following dates are fixed:

• latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2018-07-03
• latest date by which the national standards conflicting with this document have to be withdrawn	(dow)	2020-07-03

This document supersedes EN 50126-1:1999 which has been technically revised.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

EN 50126 "*Railway applications – The specification and demonstration of Reliability, Availability, Maintainability and Safety (RAMS)*" consists of the following parts:

— Part 1: Generic RAMS process;

— Part 2: System approach to safety.

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) see informative Annex ZZ, which is an integral part of this document.

Introduction

EN 50126-1:1999 was aimed at introducing the application of a systematic RAMS management process in the railway sector. Through the application of this standard and the experiences gained over the last years, the need for revision and restructuring became apparent with a need to deliver a systematic and coherent approach to RAMS applicable to all the railway application fields Command, Control and Signalling (Signalling), Rolling Stock and Electric power supply for Railways (Fixed Installations).

The revision work improved the coherency and consistency of the standard, the concept of safety management and the practical usage of EN 50126, and took into consideration the existing and related Technical Reports as well.

This European Standard provides railway duty holders and the railway suppliers, throughout the European Union, with a process which will enable the implementation of a consistent approach to the management of reliability, availability, maintainability and safety, denoted by the acronym RAMS.

Processes for the specification and demonstration of RAMS requirements are cornerstones of this standard. This European Standard promotes a common understanding and approach to the management of RAMS.

EN 50126 forms part of the railway sector specific application of IEC 61508. Meeting the requirements in this European Standard together with the requirements of other suitable standards is sufficient to ensure that additional compliance to IEC 61508 does not need to be demonstrated.

With regard to safety, EN 50126-1 provides a Safety Management Process which is supported by guidance and methods described in EN 50126-2.

EN 50126-1 and EN 50126-2 are independent from the technology used. As far as safety is concerned, EN 50126 takes the perspective of safety with a functional approach.

The application of this standard can be adapted to the specific requirements for the system under consideration.

This European Standard can be applied systematically by the railway duty holders and railway suppliers, throughout all phases of the life cycle of a railway application, to develop railway specific RAMS requirements and to achieve compliance with these requirements. The system-level approach developed by this European Standard facilitates assessment of the RAMS interactions between elements of railway applications even if they are of complex nature.

This European Standard promotes co-operation between the stakeholders of Railways in the achievement of an optimal combination of RAMS and cost for railway applications. Adoption of this European Standard will support the principles of the European Single Market and facilitate European railway inter-operability.

In accordance with CENELEC editing rules [1)], mandatory requirements in this standard are indicated with the modal verb “shall”. Where justifiable, the standard permits process tailoring.

Specific guidance on the application of this standard for Safety aspects is provided in EN 50126-2. EN 50126-2 provides various methods for use in the safety management process. Where a particular method is selected for the system under consideration, the mandatory requirements for this method are by consequence mandatory for the safety management of the system under consideration.

This European Standard consists of the main part (Clause 1 to Clause 8) and Annexes A, B, C, D and ZZ. The requirements defined in the main part of the standard are normative, whilst Annexes are informative.

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1) CEN/CENELEC Internal Regulations Part 3: Rules for the structure and drafting of CEN/CENELEC Publications (2017-02), Annex H.

1 Scope

This part 1 of EN 50126

- considers RAMS, understood as reliability, availability, maintainability and safety and their interaction;
- considers the generic aspects of the RAMS life cycle. The guidance in this part can still be used in the application of specific standards;
- defines:
  - a process, based on the system life cycle and tasks within it, for managing RAMS;
  - a systematic process, tailorable to the type and size of the system under consideration, for specifying requirements for RAMS and demonstrating that these requirements are achieved;
- addresses railway specifics;
- enables conflicts between RAMS elements to be controlled and managed effectively;
- does not define:
  - RAMS targets, quantities, requirements or solutions for specific railway applications;
  - rules or processes pertaining to the certification of railway products against the requirements of this standard;
  - an approval process for the railway stakeholders.

This part 1 of EN 50126 is applicable to railway application fields, namely Command, Control and Signalling, Rolling Stock and Fixed Installations, and specifically:

- to the specification and demonstration of RAMS for all railway applications and at all levels of such an application, as appropriate, from complete railway systems to major systems and to individual and combined subsystems and components within these major systems, including those containing software; in particular:
  - to new systems;
  - to new systems integrated into existing systems already accepted, but only to the extent and insofar as the new system with the new functionality is being integrated. It is otherwise not applicable to any unmodified aspects of the existing system;
  - as far as reasonably practicable, to modifications and extensions of existing systems already accepted, but only to the extent and insofar as existing systems are being modified. It is otherwise not applicable to any unmodified aspect of the existing system;
- at all relevant phases of the life cycle of an application;
- for use by railway duty holders and the railway suppliers.

It is not required to apply this standard to existing systems which remain unmodified, including those systems already compliant with any former version of EN 50126.

The process defined by this European Standard assumes that railway duty holders and railway suppliers have business-level policies addressing Quality, Performance and Safety. The approach defined in this standard is consistent with the application of quality management requirements contained within EN ISO 9001.