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NSAI Standards

Irish Standard
I.S. EN 62924:2017

Railway applications - Fixed installations - Stationary energy storage system for DC traction systems

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This document is based on:	*Published:*
EN 62924:2017	2017-04-21

This document was published under the authority of the NSAI and comes into effect on: 2017-05-09	ICS number: 45.060.01 NOTE: If blank see CEN/CENELEC cover page

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NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 62924

April 2017

ICS 45.060.01

English Version

Railway applications - Fixed installations - Stationary energy storage system for DC traction systems (IEC 62924:2017)

Applications ferroviaires - Installations fixes - Système fixe de stockage de l'énergie pour les systèmes de traction en courant continu (IEC 62924:2017)

Bahnanwendungen - Ortsfeste Anlagen - Ortsfeste Energiespeichersysteme für Gleichstrombahnen (IEC 62924:2017)

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The text of document 9/2221/FDIS, future edition 1 of IEC 62924, prepared by IEC/TC 9 "Electrical equipment and systems for railways" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 62924:2017.

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• latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2017-12-03
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IEC 60146-2:1999	NOTE	Harmonized as EN 60146-2:2000.
IEC 61881-3	NOTE	Harmonized as EN 61881-3.
IEC 62620	NOTE	Harmonized as EN 62620.
IEC 62864-1:2016	NOTE	Harmonized as EN 62864-1:2016.
IEC 62928[1]	NOTE	Harmonized as FprEN 62928.

1) To be published.

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Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

Publication	Year	Title	EN/HD	Year
IEC 60146-1	series	Semiconductor converters - General requirements and line commutated converters	EN 60146-1	series
IEC 60529	-	Degrees of protection provided by enclosures (IP Code)		-
IEC 60850	-	Railway applications - Supply voltages of traction systems		-
IEC 61936-1	-	Power installations exceeding 1 kV a.c. -- Part 1: Common rules	EN 61936-1	-
IEC 61992-7-1	-	Railway applications - Fixed installations -- DC switchgear - Part 7-1: Measurement, control and protection devices for specific use in d.c. traction systems - Application guide		-
IEC 62236	series	Railway applications - Electromagnetic compatibility		series
IEC 62236-1	-	Railway applications - Electromagnetic compatibility -- Part 1: General		-
IEC 62236-5	-	Railway applications - Electromagnetic compatibility -- Part 5: Emission and immunity of fixed power supply installations and apparatus		-
IEC 62590	2010	Railway applications - Fixed installations -- Electronic power converters for substations		-

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INTERNATIONAL STANDARD

NORME INTERNATIONALE

Railway applications – Fixed installations – Stationary energy storage system for DC traction systems

Applications ferroviaires – Installations fixes – Système stationnaire de stockage d'énergie pour les systèmes de traction en courant continu

IEC 62924:2017-01(en-fr)

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IEC 62924

Edition 1.0 2017-01

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NORME INTERNATIONALE

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Applications ferroviaires – Installations fixes – Système stationnaire de stockage d'énergie pour les systèmes de traction en courant continu

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ICS 45.060.01

ISBN 978-2-8322-3860-8

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RAILWAY APPLICATIONS – FIXED INSTALLATIONS – STATIONARY ENERGY STORAGE SYSTEM FOR DC TRACTION SYSTEMS

FOREWORD

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FDIS	Report on voting
9/2221/FDIS	9/2244/RVD

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INTRODUCTION

To save natural resources and counteract global warming, techniques to save energy and/or to improve environmental characteristics are drawing strong interest. In the railway industry, electric rail vehicles fitted with regenerative braking systems have been introduced, not only to save energy, but also to ease maintenance and to reduce the adverse effects of heat generated during braking (especially in tunnels).

However, in DC electric railways, when a train regenerates power, usually the power has to be consumed within the DC network, because DC power supply substations are usually not reversible. There is no guarantee that adequate load exists for regenerative braking trains; in such a circumstance, regenerative braking becomes ineffective, either in part or in whole. In this situation, the power supply network is unreceptive. Among the emerging technologies to improve receptivity is stationary energy storage systems (ESSs). A stationary ESS charges regenerative energy when the power supply network is unreceptive and stores it for use at a later time.

International Standards for stationary ESSs have not been issued. Before ESSs become widely used, international standardization of the basic system structure and measurement method for efficiency, etc., will serve as a guideline for users and manufacturers who want to introduce ESSs.

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RAILWAY APPLICATIONS – FIXED INSTALLATIONS – STATIONARY ENERGY STORAGE SYSTEM FOR DC TRACTION SYSTEMS

1 Scope

This document specifies the requirements and test methods for a stationary energy storage system to be introduced as a trackside installation and used in a power supply network of a DC electrified railway. This system can take electrical energy from the DC power supply network, store the energy, and supply the energy back to the DC power supply network when necessary. This document does not apply to onboard energy storage systems.

This document applies to systems which are installed to achieve one or more of the following objectives.

- Absorption of regenerative energy:
  - effective use of regenerative energy (saving energy);
  - reduction of rolling stock maintenance (reduction of brake shoe/pad wear, etc.);
  - avoidance of adverse effects of heat generated during braking (e.g. in tunnels, etc.).
- Power compensation:
  - compensation of line voltage;
  - reduction of peak power;
  - reduction in the requirement of the rectifier ratings.

If this system is combined with one or more of the following functions, this document may be used as a guideline:

- reverse transmission of regenerated power to the upstream power supply network (e.g. inverting or reversible substations);
- use of the regenerated energy for purposes other than the running of trains, such as for station facilities, etc.;
- resistive consumption of regenerated power.

Although it is assumed that the system uses the following typical energy storage technologies, this document also applies to other existing or future technologies:

- batteries (lithium-ion, nickel metal hydride, etc.);
- capacitors (electric double layer capacitors, lithium-ion capacitors, etc.);
- flywheels.

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.

IEC 60146 (all parts), *Semiconductor converters*

IEC 60529, *Degrees of protection provided by enclosures (IP Code)*

IEC 60850, *Railway applications – Supply voltages of traction systems*

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