
Železniške naprave - Baterije za pomožne močnostne napajalne sisteme

Railway applications - Batteries for auxiliary power supply systems

Bahnanwendungen - Batterien für Bordnetzversorgungssysteme

Applications ferroviaires - batteries pour systèmes d'alimentation auxiliaire

Ta slovenski standard je istoveten z: EN 50547:2013

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EUROPEAN STANDARD
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**Railway applications -
Batteries for auxiliary power supply systems**

Applications ferroviaires -
Batteries pour systèmes d'alimentation
auxiliaire

Bahnanwendungen -
Batterien für
Bordnetzversorgungssysteme

iTeh STANDARD PREVIEW

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CENELEC

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

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Foreword

This document (EN 50547:2013) has been prepared by Working Group 20 of SC 9XB, Electromechanical material on board of rolling stock, of Technical Committee CENELEC TC 9X, Electrical and electronic applications for railways.

The following dates are fixed:

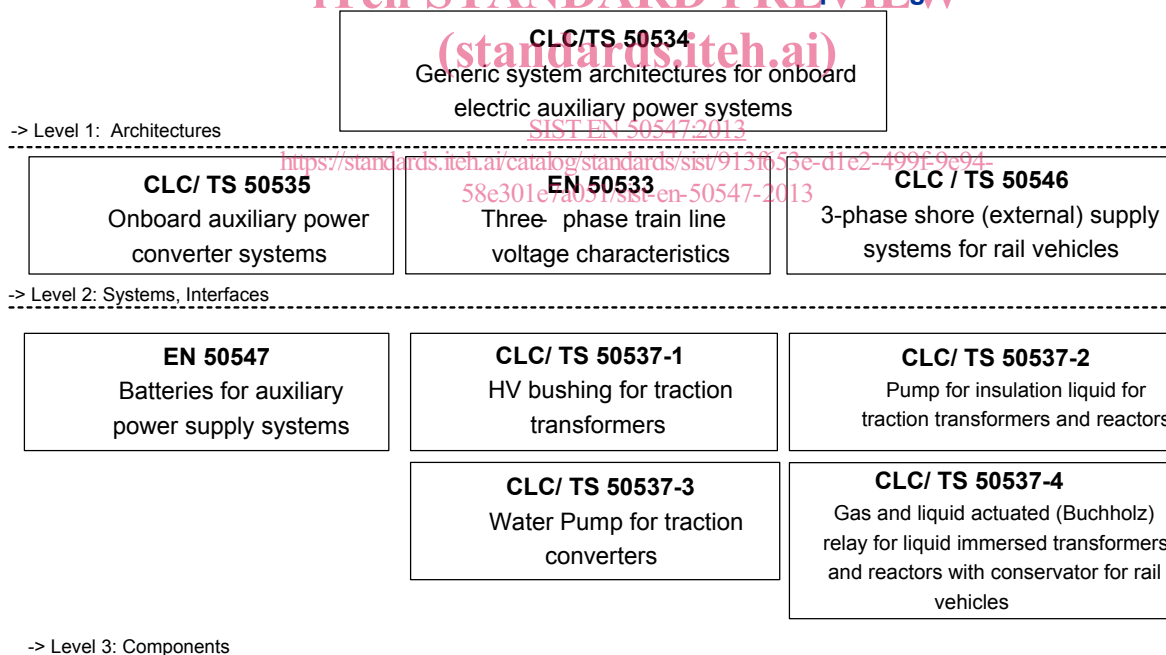
- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2014-03-04
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2016-03-04

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

EN 50547 shall be read in conjunction with CLC/TS 50534:2010 “*Railway applications - Generic system architectures for onboard electric auxiliary power systems*”.

This standardization project was derived from the EU-funded Research project MODTRAIN (MODPOWER). It is part of a series of standards, referring to each other. The hierarchy of the standards is intended to be as follows:

Overview on the technical framework CLC/TS 50534 defines the basis for other depending standards



1 Scope

This European Standard specifies rechargeable lead acid and NiCd-batteries for 110 V voltage auxiliary power supply system for railway vehicles.

This European Standard may be applied to other rolling stock types (e.g. light rail vehicles, tramways, metros...) if these are not in the scope of another specific standard.

Others technologies like NiMh or Lithium are not covered by this standard at present.

This European Standard focuses on:

- the description of mechanical interfaces: dimensions of the cells or monobloc batteries, main terminals and preferred sizes of the mounting space of the battery systems for lead acid batteries,
- the description of mechanical interfaces: dimensions of the trays and main terminals for NiCd batteries (as they have different characteristics depending on the technology),
- description of electrical interfaces: capacity, voltage and charging characteristic.

This European Standard restricts the variety of different types provided by EN 60254 and EN 60896 for lead acid batteries and defines the use of cells compliant to EN 60623 and EN 62259 for NiCd-Batteries.

The main objective of this standard is to achieve interchangeability of the battery cells and monobloc for lead acid batteries and the interchangeability of the battery trays for NiCd batteries.

2 Normative references

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The following documents, in whole or in part are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 50125-1:1999	<i>Railway applications - Environmental conditions for equipment - Part 1: Equipment on board rolling stock</i>
EN 50155:2007	<i>Railway applications - Electronic equipment used on rolling stock</i>
EN 50272-2:2001	<i>Safety requirements for secondary batteries and battery installations Part 2: Stationary batteries</i>
EN 50272-3:2002	<i>Safety requirements for secondary batteries and battery installations Part 3: Traction batteries</i>
EN 50467:2011	<i>Railway applications - Rolling stock - Electrical connectors, requirements and test methods</i>
EN 60077-1:2002	<i>Railway applications - Electric equipment for rolling stock - Part 1: General service conditions and general rules (IEC 60077-1:1999, mod.)</i>
EN 60254-1:2005	<i>Lead-acid traction batteries - Part 1: General requirements and methods of test (IEC 60254-1:2005)</i>
EN 60254-2:2008	<i>Lead-acid traction batteries - Part 2: Dimensions of cells and terminals and marking of polarity on cells (IEC 60254-1:2005)</i>
EN 60623:2001	<i>Secondary cells and batteries containing alkaline or other non-acid electrolytes - Vented nickel-cadmium prismatic rechargeable single cells (IEC 60623:2001)</i>

EN 60896-11:2003	<i>Stationary lead-acid batteries - Part 11: Vented types; General requirements and methods of test (IEC 60896-11:2002)</i>
EN 60896-21:2004	<i>Stationary lead-acid batteries - Part 21: Valve regulated types - Methods of test (IEC 60896-21:2004)</i>
EN 61373:2010	<i>Railway applications - Rolling stock equipment - Shock and vibration test (IEC 61373:2010)</i>
EN 62259:2004	<i>Secondary cells and batteries containing alkaline or other non-acid electrolytes - Nickel cadmium prismatic secondary single cells with partial gas recombination (IEC 62259:2003)</i>
CEN/CLC TS 45545 series	<i>Railway applications - Fire protection on railway vehicles</i>
EN ISO 7010:2012	<i>Graphical symbols - Safety colours and safety signs - Safety signs used in workplaces and public areas (ISO 7010:2011)</i>
IEC 60410:1973	<i>Sampling plans and procedures for inspection by attributes</i>

3 Terms, definitions and abbreviations

3.1 Terms and definitions

For the purpose of this document, the following terms and definitions apply.

NOTE All typical battery related descriptions are defined in IEC 60050-482.

3.1.1

battery crate

container with frame walls for holding several cells or batteries

[SOURCE: IEC 60050-482:2004, 482-05-10] [SIST EN 50547:2013
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Note 1 to entry: See Clause 7.

3.1.2

battery tray

container with a base and walls for holding several cells or batteries

[SOURCE: IEC 60050-482:2004, 482-02-35]

Note 1 to entry: See Clause 7.

3.1.3

cell

basic functional unit, consisting of an assembly of electrodes, electrolyte, container, terminals and usually separators, that is a source of electric energy obtained by direct conversion of chemical energy

[SOURCE: IEC 60050-482:2004, 482-01-01]

3.1.4

lead acid battery

secondary battery with an aqueous electrolyte based on dilute sulphuric acid, a positive electrode of lead dioxide and a negative electrode of lead

[SOURCE: IEC 60050-482:2004, 482-05-01]

3.1.5**monobloc battery**

battery with multiple separate but electrically connected cell compartments each of which is designed to house an assembly of electrodes, electrolyte, terminals or interconnections and possible separators

[SOURCE: IEC 60050-482:2004, 482-02-17]

Note 1 to entry: The cells in a monobloc battery can be connected in series or in parallel.

Note 2 to entry: See Clause 7.

3.1.6**nickel cadmium battery**

secondary battery with an alkaline electrolyte, a positive electrode containing nickel oxide and a negative electrode of cadmium

[SOURCE: IEC 60050-482:2004, 482-05-02]

3.1.7**rated capacity of the battery**

C_R : capacity value of a battery determined under specified conditions and declared by the manufacturer

[SOURCE: IEC 60050-482:2004, 482-03-15]

3.1.8**valve regulated lead acid battery**

secondary battery in which cells are closed but have a valve which allows the escape of gas if the internal pressure exceeds a predetermined value

[SOURCE: IEC 60050-482:2004, 482-05-15]

Note 1 to entry: The cell or battery cannot normally receive additions to the electrolyte.

3.1.9**vented cell**

secondary cell having a cover provided with an opening through which products of electrolysis and evaporation are allowed to escape freely from the cell to the atmosphere

[SOURCE: IEC 60050-482:2004, 482-05-14]

3.2 Abbreviations

For the purpose of this document, the following abbreviations apply:

AC	Alternating Current
AGM	Absorbent Glass Mat
C ₅	Capacity at the 5-hour rate
CCTV	Closed-Circuit Television
DC	Direct Current
DoD	Depth of Discharge
EMU	Electrical Multiple Unit
FEM	Finite Elements Method
GEL	Gel filled battery
H	Height
HVAC	Heating, Ventilation, Air Conditioning
HST	High Speed Train
L	Length
LRU	Line replaceable Unit
LVPS	Low Voltage Power Supply
NiCd	Nickel Cadmium
NiMH	Nickel-Metal Hydride
NTC	Negative Temperature Coefficient
PBE	Plastic Bonded Electrode
PT 100	Temperature Sensor, Type PT 100
SOC	State of Charge
VRLA	Valve Regulated Lead Acid
W	Width

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4 General requirements

4.1 Definitions of the components of a battery

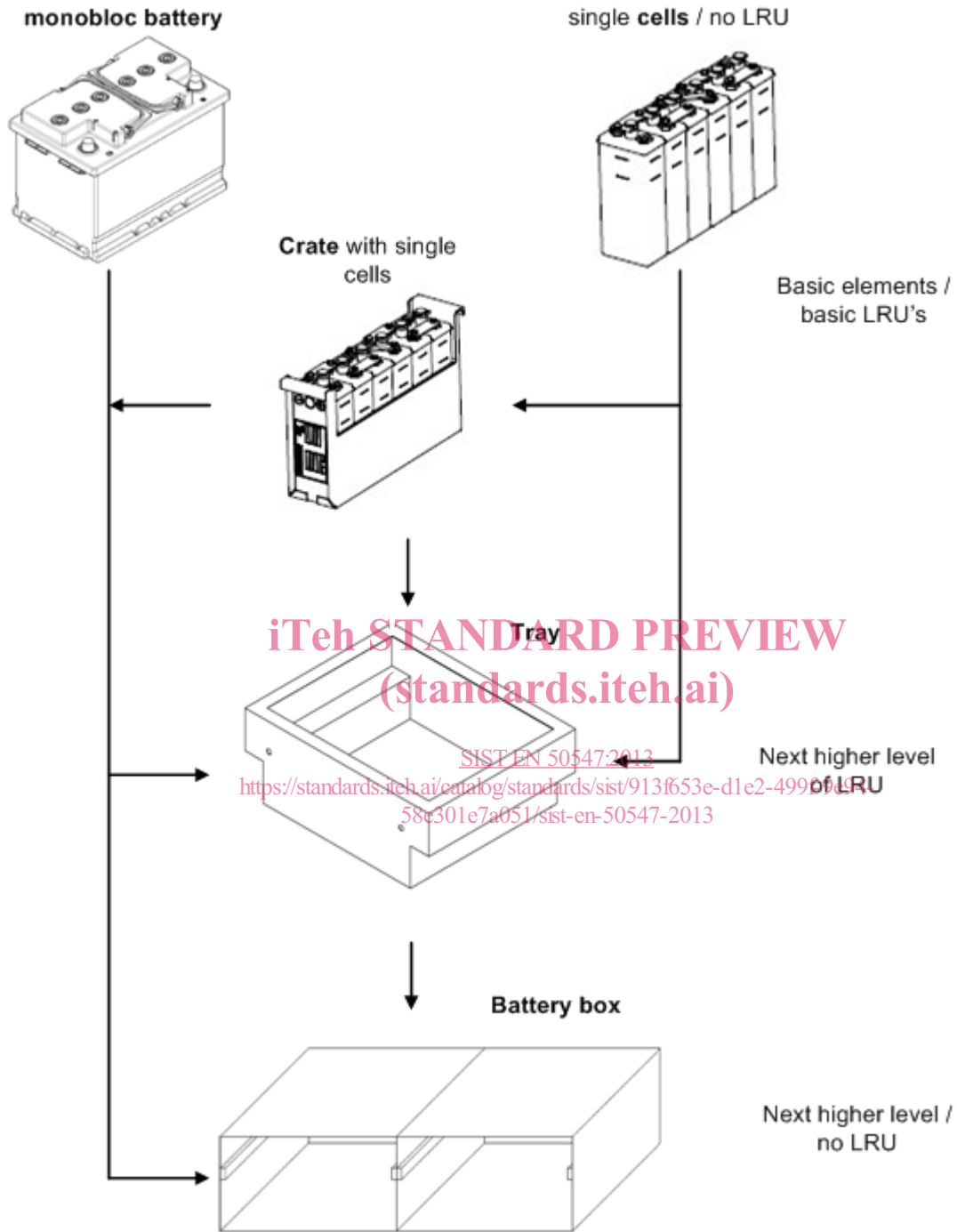


Figure 1 - Definition of cell, monobloc battery, crate, tray and box