SLOVENSKI STANDARD
oSIST prEN IEC 63330:2022

01-december-2022

Zahteve za ponovno uporabo sekundarnih baterij

Requirements for reuse of secondary batteries

Prescriptions pour la ré-utilisation des batteries d'accumulateurs

Ta slovenski standard je istoveten z: **prEN IEC 63330:2022**

ICS:

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FUNCTIONS CONCERNED: ☐ EMC ☐ ENVIRONMENT ☐ QUALITY ASSURANCE ☒ SAFETY	
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TITLE:

Requirements for reuse of secondary batteries

PROPOSED STABILITY DATE: 2027

NOTE FROM TC/SC OFFICERS:

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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General requirements for repurposing of secondary batteries

FOREWORD

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International Standard IEC 63330 has been prepared by IEC technical committee 21: Secondary cells and batteries.

The text of this International Standard is based on the following documents:

FDIS	Report on voting
21/XX/FDIS	21/XX/RVD

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

INTRODUCTION

Increasing concerns about the global warming, air quality and energy saving have been encouraging the utilization of rechargeable energy storage systems for different applications such as electric mobility. In parallel, technical advance in secondary batteries, especially in lithium-ion batteries, provides the market with practical option to repurpose the used batteries and battery systems that may maintain substantial performance even after the end of use of original equipment such as electric vehicle.

In order to foster such new business and to accelerate effective and safe utilization of energy source, it is indispensable to establish a basic international standard for evaluation of safety and performance of used batteries and battery systems, which derive from different equipment with different histories, and will be repurposed for different applications.

This document intends to provide basic requirements and procedure how to evaluate the performance and safety of used batteries and battery systems, and also provide general requirements for application of repurposed batteries.

General requirements for repurposing of secondary batteries

1 Scope

This document provides general requirements for repurposing of secondary cells, modules, battery packs and battery systems, herein also referred to as "PRODUCT", that are originally manufactured for other applications such as electric vehicles.

This document specifies the procedure to evaluate the performance and safety of used PRODUCT for repurposing.

This document also provides basic requirements for application of repurposed PRODUCT.

This document targets secondary lithium PRODUCT mainly, but not exclusively.

The redox flow batteries are not covered by this document.

NOTE - General guidance for reuse of secondary lithium cells and batteries is provided in IEC 63338 (under development).

2 Normative references

There are no normative references in this document.

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.1
repurposing
operation by which PRODUCT that are not waste are used again in a different application to when first placed on the market

Note 1 to entry: In this document, PRODUCT is cell, battery, module, battery pack and battery system.

Note 2 to entry: The repurposing in this document includes usage of used battery for the same type of purpose as original equipment, with change of battery pack composition.

Note 3 to entry: Alternative common terms for repurposing include "second use" and "second life".

3.2
secondary cell
cell
basic manufactured unit providing a source of electrical energy by direct conversion of chemical energy, that consists of electrodes, separators, electrolyte, container and terminals, and that is designed to be charged electrically

3.3
module
group of cells connected together either in a series and/or parallel configuration with or without protective devices (e.g. fuse or positive temperature coefficient device) and monitoring circuitry

[SOURCE: IEC 62619: 202x, 3.10]

3.4
battery pack
energy storage device, which is comprised of one or more cells or modules electrically connected and has monitoring circuitry which provides information (e.g. cell voltage) to a battery system to influence the battery's safety, performance and/or service life

Note 1 to entry: It may incorporate a protective housing and be provided with terminals or other interconnection arrangements.

[SOURCE: IEC 62619: 202x, 3.10]

3.5
battery system
system which comprises one or more cells, modules or battery packs and has a battery management system capable of controlling current in case of overcharge, overcurrent, overdischarge, and overheating

Note 1 to entry: The battery system may have cooling or heating units. More than one battery systems may constitute a larger battery system. The battery system is sometimes also referred to as a battery.

[SOURCE: IEC 62619: 202x, 3.11, modified - The second preferred term and Note 1 have been deleted.]

3.6
battery management system
BMS
electronic system associated of a battery which has functions to control current in case of overcharge, overcurrent, overdischarge, and overheating and which monitors and/or manages its state, calculates secondary data, reports that data and/or controls its environment to influence the battery's safety, performance and/or service life

Note 1 to entry: Overdischarge cut off is not mandatory.

Note 2 to entry: The function of the BMS can be assigned to the battery pack or to equipment that uses the battery.

Note 3 to entry: The BMS can be divided and it can be found partially in the battery pack and partially on the equipment that uses the battery.

Note 4 to entry: The BMS is sometimes also referred to as a BMU (battery management unit)

[SOURCE: IEC 62619: 202x, 3.12, modified - Note 1 to Note 3 have been modified.]

3.7
rated capacity
C_n
capacity value of a cell or battery in ampere hour (Ah) determined under specified conditions and declared by the cell manufacturer

3.8
state of charge
SOC
capacity in a battery expressed as a percentage of rated capacity

3.9
operating region
conditions during charging and discharging in which the cell operates within the range of voltage, current and temperature as specified by the cell manufacturer to ensure the safe use of the cell

Note 1 to entry: The limits of the operating region are specified for the minimum safety, and different from the charging voltage and temperature to optimize the performance of the cell such as cycle life.

3.10
operating range
conditions during charging and discharging in which the battery system operates within the range of voltage, current and temperature as specified by the system manufacturer to ensure the safe use of the battery system

Note 1 to entry: Figure B.2 shows the relation between the operating range and the operating region.

3.11
safety design
battery design to avoid or control systematic failures and to detect or control random hardware failures, or mitigate their harmful effects

3.12
systematic failure
failure related in a deterministic way to a certain cause, that can only be eliminated by a change of the design or of the manufacturing process, operational procedures, documentation or other relevant factors

3.13
random hardware failure
failure that can occur unpredictably during the lifetime of battery and that follows a probability distribution

3.14
failure
termination of an intended behavior of battery due to a fault manifestation

3.15
fault
abnormal condition that can cause battery to fail

3.16
service life
total period of useful life of PRODUCT in operation which is specified for original usage

Note 1 to entry - For secondary cells and batteries, the service life may be expressed in time, number of charge/discharge cycles, capacity in ampere hours (Ah) and operating conditions (temperature range, C rate, depth of discharge, etc.).

Note 2 to entry - The service life does not equal the guarantee or warrantee period provided by the original manufacturer.

Note 3 to entry - The service life is not clearly specified for vehicle propulsion application.

[SOURCE: IEC 60050-482:2004, 482-03-46, modified]

3.17
residual usable period
remaining period of service life or estimated remaining period of useful life of battery in operation