**IS xxxxx : 2024**

***भारतीय मानक***

***Indian Standard***

**IEC 62933-4-4: 2023**

विधुत ऊर्जा सग्रहण प्रणालियाँ

भाग 4 पर्यवार्नीय आवश्यकताएं

अनुभाग 4 बैटरी आधारित ऊर्जा संग्रहण प्रणालियां (बीइएसएस) बैटरी के पुनःप्रयोग सहित

Electrical Energy Storage (EES) systems

Part 4 Environmental Requirements

Section 4 Battery Based Energy Storage Systems BESS with Reused Batteries

ICS 13.020.30

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 भारतीय मानक ब्यूरो

BUREAU OF INDIAN STANDARDS

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Electrical Energy Storage Systems Sectional Committee, ETD 52

NATIONAL FOREWORD

This Indian Standard (Part 4/Sec 4) which is identical withIEC 62933-4-4: 2023 ‘Electrical energy storage (EES) systems – Part 4 Environmental requirements Section 4 Battery-based energy storage systems (BESS) with reused batteries’ issued by the International Electrotechnical Commission (IEC) was adopted by the Bureau of Indian Standards on the recommendation of the Electrical Energy Storage Systems Sectional Committee and approval of the Electrotechnical Division Council.

This standard is published in various parts. Other parts in this series are:

|  |  |
| --- | --- |
| Part 1 | Vocabulary |
| Part 2/Sec 1 | Unit parameters and testing methods section 1 general specification |
| Part 4/Sec 1 | Guidance on environmental issues section 1 general specification |
| Part 5/Sec 2 | Safety requirements for grid integrated EES systems section 2 electrochemical based systems |

The increased use of renewable energy is enhancing the decarburization of energy production by reducing CO2 emissions caused by the use of fossil fuels. The production of renewable energy with solar and wind power is however associated with large temporal output fluctuations. This causes increased voltage and frequency instabilities in the power grid. These irregularities can be advantageously counteracted with battery-based energy storage systems (BESS). Such battery-based energy storage systems can be assembled with reused batteries coming from other electric energy storage installations or electric vehicles.

The reuse of batteries enhances all facets of the life cycle thinking (LCT) by reducing premature product obsolescence. Reused cells, modules or battery assemblies entail particular attention toward the possible impact on the environment they will have due to their being a pre-aged component. The impacts to the environment resulting from reused batteries are reviewed and appropriate requirements are defined in this standard. This document complements, when reused batteries are involved, the information and guidance provided by IS 17067-4-1.

The text of the IEC Standard has been approved as suitable for publication as an Indian Standard without deviations. Certain conventions are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

1. Wherever the words ‘International Standard’ appears referring to this standard, they should be read as ‘Indian Standard’.
2. Comma (,) has been used as a decimal marker, while in Indian Standards the current practice is to use a point (.) as the decimal marker.

In this adopted standard, reference appears to International Standards for which Indian Standards also exists. The corresponding Indian Standards, which are to be substituted, are listed below along with their degree of equivalence for the editions indicated:

|  |  |  |
| --- | --- | --- |
| *International Standard* | *Corresponding Indian Standard* | *Degree of Equivalence* |
| IEC 60529, Degrees of protection provided by enclosures (IP Code) | IS/IEC 60529 : 2001, Degrees of protection provided by enclosures (IP Code) | Identical |
| IEC TS 62933-4-1:2017, Electric energy storage (EES) systems – Part 4-1: Guidance on environmental issues – General specification | IS 17067 (Part 4/Sec 1) : 2019 / IEC  62933-4-1 : 2017, Electrical Energy Storage ( EES ) Systems Part 4 Guidance on Environmental Issues Section 1 General specification | Identical |

The technical committee has reviewed the provisions of the following international standards referred in this adopted standard and decided that they are acceptable for use in conjunction with this standard.

|  |  |
| --- | --- |
| *International Standard* | *Title* |
| IEC Guide 109:2012, | Environmental aspects – Inclusion in electrotechnical product standards |

Only English language text has been retained while adopting it in this Indian Standard, and as such the page numbers given here are not the same as in the International Standard.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated expressing the result of a test, shall be rounded off in accordance with IS 2: 2022 ‘Rules for rounding off numerical values (*second revision*)’. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.