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Električne naprave za shranjevanje energije (EES) - 4-3. del: Zaščitne zahteve za BESS glede na okoljske razmere

Electrical energy storage (EES) systems - Part 4-3: The protection requirements of BESS according to the environmental conditions

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SECRETARIAT:	SECRETARY:
Japan	Mr Masatake SAKUMA
OF INTEREST TO THE FOLLOWING COMMITTEES:	HORIZONTAL FUNCTION(S):
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ASPECTS CONCERNED:	
Environment	
☒ SUBMITTED FOR CENELEC PARALLEL VOTING	☐ NOT SUBMITTED FOR CENELEC PARALLEL VOTING
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TITLE:

Electrical energy storage(EES) systems - Part 4-3: The protection requirements of BESS according to the environmental conditions

PROPOSED STABILITY DATE: 2031

NOTE FROM TC/SC OFFICERS:

This CDV has been reflected the observations of 120/375A/CC. It has been also reflected the results of the votes of 120/380/Q.

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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ELECTRICAL ENERGY STORAGE (EES) SYSTEMS

Part 4-3: The protection requirements of BESS according to the environmental conditions

FOREWORD

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IEC 62933-4-3 has been prepared by subcommittee WG4: of IEC technical committee TC120: Electrical Energy Storage (EES) systems. It is an International Standard.

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

Draft	Report on voting
XX/XX/FDIS	XX/XX/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

89 The language used for the development of this International Standard is English.

90 This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in
91 accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement available
92 at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are
93 described in greater detail at www.iec.ch/publications.

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

97 • reconfirmed,
98 • withdrawn,
99 • replaced by a revised edition, or
100 • amended.
101

INTRODUCTION

According to the reports over the world, BESS has been influenced by the environmental conditions and the climatic conditions of the areas where it is installed. Particularly the BESS can be affected by temperature, humidity, and vibration and natural disasters. In order to minimize the impacts, this document is expected to be of great help in stable installation and operation by presenting the causes, risk factors and the appropriate measures for each environmental condition when installing the BESS

ELECTRICAL ENERGY STORAGE (EES) SYSTEMS

Part 4-3: The protection requirements of BESS according to the environmental conditions

1 Scope

This part of IEC 62933 applies to the effects of the environmental conditions on Battery Energy Storage Systems (BESS). This document addresses these effects and identifies causes, chain of events and final effects on the BESS. Based on those effects, preventative or mitigating measures are described. Typical environmental effects on the BESS include, but are not limited to, the effects of lightning, seismic activities, water, air, flora, fauna, and humans. The described measures focus as a guideline on the entire BESS including all power and communication connections and its Point of Connections (POCs).

The scope of this document is limited to BESS specific requirements and operating conditions. Specific design or safety requirements of individual BESS subsystems are excluded from this document

2 Normative references

The following documents are referred to in the text in such a way that some or all their content constitutes the 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 62933-1, Electrical energy storage (EES) systems – Part 1: Vocabulary

IEC TS 62933-4-1, Electrical energy storage (EES) systems - Part 4-1: Guidance on environmental issues – General specification

IEC 60050-631, International Electrotechnical Vocabulary (IEV): Part 631. Electrical energy storage systems

ISO 14050:2009, Environmental management — Vocabulary: 3.1

ISO 14001:2015, Environmental management systems — Requirements with guidance for use, 3.2.4

3 Terms and definitions

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

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

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

For the purposes of this document, the terms and definitions given in IEC 62933-1and the following apply.

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

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

3.1
Environmental factor
Physical, social and attitudinal environment in which people live and conduct their lives

[SOURCE: ISO 9999:2022(en), 3.7]

3.2
Risk analysis
Systematic use of available information to identify hazards and to estimate the risk

[SOURCE: ISO/IEC Guide 51:1999, 3.10]

3.3
Seismic action
Action caused by earthquake ground motions

[SOURCE: ISO 2394:2015, 2.3.15]

3.4
Human factor
Environmental, organisational, and job factors which influence behaviour of work in a way that can affect health and safety

[SOURCE: ISO 13702:2015(en), 3.1.28]

3.5
Arcing
Luminous discharge of electricity across an insulating medium, usually accompanied by the partial volatilization of the electrodes

Note 1 to entry: A complete sinusoidal current half-cycle is not considered to be an arcing half-cycle.

[SOURCE: IEC 62606:2013, 3.1]

3.6
Internal resistance
Opposition to the flow of current within a cell (3.4) or a battery (3.3), that is, sum of electronic resistance and ionic resistance with the contribution to total effective resistance including inductive/capacitive properties

[SOURCE: ISO 17546:2024(en), 3.17]

3.7
BMS (Battery Management System)
Set of protection functions associated with a battery to prevent overcharge, overcurrent, over-temperature, under-temperature and, if applicable, overdischarge 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'

[SOURCE: ISO 63056-2020(en), 3.12]

3.8
Water leakage
Water drop or flow that spills out from the closed pipe and container

[SOURCE: ISO 2710-2:2019(en), 3.4.37]

3.9
EMC (Electromagnetic Compatibility)
Ability of equipment or a system to function satisfactorily in its electromagnetic environment without introducing intolerable electromagnetic disturbances to anything in that environment

IEV ref 161-01-07

3.10
High voltage

Voltage having a value above a conventionally adopted limit

Note – An example is the set of upper voltage values used in bulk power systems

[SOURCE: 601-01-27 MOD]

IEV ref 151-15-05

3.11
Salinity
Quantification of any dissolved salts in water, expressed as either a percentage or a concentration

[SOURCE: ISO/TR 12748:2015(en), 2.50]

3.12
Stem
Portion of a standing tree above ground, excluding branches

[SOURCE: ISO 8965:2022(en), 3.4.1]

3.13
Mould
Woolly or powdery fungal growth that can form on the surface of wood (3.1) in damp conditions

[SOURCE: ISO 24294:2021(en), 13.17]

3.14
POC (point of connection)
reference point on the electric power system (IEV 601-01-01) where an EES system is connected

[SOURCE: IEC 62933-1:2024, 4.1.3]

4 General

The impact on Battery Energy Storage Systems (BESS) from environmental factors depends on the location of the BESS installation. This standard provides guidelines on the environmental factors and requirements for identifying potential impacts on BESS installed in described environmental areas.