



PRE-RELEASE VERSION (FDIS)

**Electrical energy storage (EES) systems –
Part 4-4: Environmental requirements for battery-based energy storage systems
(BESS) with reused batteries**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

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TITLE:

Electrical energy storage (EES) systems- Part 4-4: Standard on environmental issues battery-based energy storage systems (BESS) with reused batteries – requirements

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NOTE FROM TC/SC OFFICERS:

This FDIS has been reflected observations of 120/330/RVC based on CDV sent from IEC CO. In addition, this FDIS contains the responses to the IEC editor's comments in the CDV, and the relevant parts have been corrected.

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTRICAL ENERGY STORAGE (EES) SYSTEMS –

Part 4-4: Environmental requirements for battery-based energy storage systems (BESS) with reused batteries

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IEC 62933-4-4 has been prepared by IEC technical committee 120: 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
120/XX/FDIS	120/XX/RVD

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

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

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

A list of all parts in the IEC 62933 series, published under the general title *Electrical energy storage (EES) systems*, can be found on the IEC website.

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

- reconfirmed,
- withdrawn, or
- revised.

INTRODUCTION

The increased use of renewable energy is enhancing the decarbonization 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.

This document complements, when reused batteries are involved, the information and guidance provided by IEC TS 62933-4-1.

ELECTRICAL ENERGY STORAGE (EES) SYSTEMS –

Part 4-4: Environmental requirements for battery-based energy storage systems (BESS) with reused batteries

1 Scope

This part of the IEC 62933 series describes environmental issues when reused batteries are considered for a BESS.

It provides details and requirements for identifying and preventing environmental issues in each life cycle stage, i.e., from the design to the disassembly of such reused batteries in a BESS.

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

IEC TS 62933-4-1:2017, *Electric energy storage (EES) systems – Part 4-1: Guidance on environmental issues – General specification*

IEC Guide 109:2012, *Environmental aspects – Inclusion in electrotechnical product standards*