

TECHNICAL REPORT

**Distributed energy resources connection with the grid -
Part 101: Gravity storage connection to the grid**

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Distributed energy resources connection with the grid - Part 101: Gravity storage connection to the grid

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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.

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- withdrawn, or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.

1 Scope

This part of IEC TS 62786, which is a Technical Report, provides the principles and general technical characteristics of gravity energy storage systems (**GESS**) connected to the distribution network. It provides a reference for the planning, design, grid connection and operation of **GESS**. It includes an introduction to **GESS**, grid-connection methods, grid-connected characteristics, grid-connected operation and grid-connected testing and so on.

GESS can use liquid or solid mediums for storing or releasing energy. For example, traditional pumped storage utilizes liquid water to achieve energy storing or releasing. This document only focuses on the solid **GESS**, which utilize solid materials (such as concrete, slag, construction waste, etc.) for energy storage. Generally, **GESS** can be classified as vertical **GESS** and slope **GESS**. In the **GESS**, the motor-generators (**MG**) that are directly connected, or indirectly connected to the low voltage (**LV**) or medium voltage (**MV**) distribution network through converters, transfer the energy between the mass blocks and the grid. This document reports the grid-connection method, active power response characteristic, response of active power to frequency, response of reactive power to voltage and test of direct grid connection through synchronous motor-generator (**SMG**), as a supplement to IEC TS 62786-1:2023 [1].

This document describes the interface arrangement for the connection of **GESS** to distribution networks with the nominal frequency of 50 Hz or 60 Hz.

2 Normative references

There are no normative references in this document.

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