

# Energy storage flywheel motor





## Overview

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How does a flywheel energy storage system work?

Flywheel Energy Storage Systems (FESS) rely on a mechanical working principle: An electric motor is used to spin a rotor of high inertia up to 20,000-50,000 rpm. Electrical energy is thus converted to kinetic energy for storage. For discharging, the motor acts as a generator, braking the rotor to produce electricity.

What type of motor is used in a flywheel energy storage system?

Permanent-Magnet Motors for Flywheel Energy Storage Systems The permanent-magnet synchronous motor (PMSM) and the permanent-magnet brushless direct current (BLDC) motor are the two primary types of PM motors used in FESSs. PM motors boast advantages such as high efficiency, power density, compactness, and suitability for high-speed operations.

What is a flywheel energy storage system (fess)?

As shown in Fig. 1, a typical flywheel energy storage system (FESS) consists of a flywheel, motor/generator (hereinafter referred to as the “motor”), bearings, sealed chamber, inverter, and auxiliary equipment such as vacuum and cooling devices.

How does a vertical flywheel energy storage system affect power?

This will reduce motor power and affect the normal operation of the system. For vertical flywheel energy storage systems, most of the exergy loss in the heat transfer process is concentrated in the motor stator, casing, and cooling water. As the power increases, the proportion of exergy loss in the stator decreases.



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### Flywheel Energy Storage

2.4 Flywheel energy storage Flywheel energy storage, also known as kinetic energy storage, is a form of mechanical energy storage that is a suitable to achieve the smooth operation of ...

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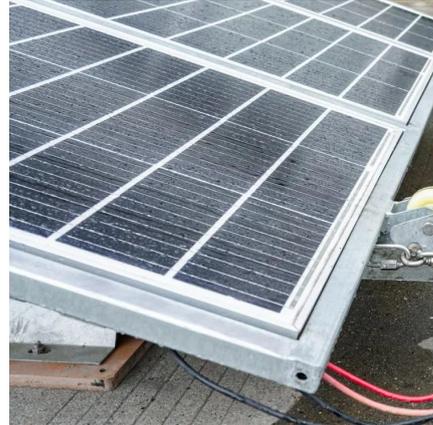


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rotor structures are used to eliminate the ...

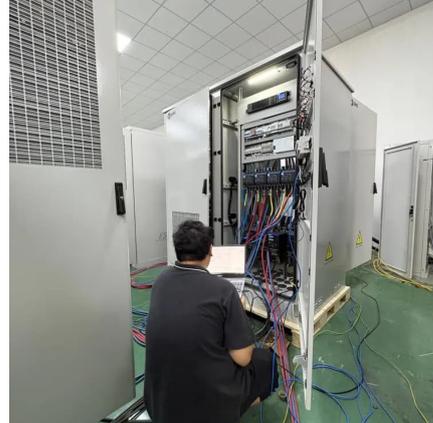


## Introduction to motors and controllers of flywheel energy storage ...

The paper covers the principle and characteristics of permanent magnet brushless DC motors, permanent magnet synchronous motors, induction motors and switched reluctance motors, ...

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