

## PEES Power Systems

# Benin is a flywheel energy storage motor



## Overview

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One motor is specially designed as a high-velocity flywheel for reliable, fast-response energy storage—a function that will become increasingly important as electric power systems become more reliant on intermittent energy sources such as solar and wind. Flywheel energy storage (FES) works by spinning a rotor (flywheel) and maintaining the energy in the system as rotational energy. When energy is extracted from the system, the flywheel's rotational speed is reduced as a consequence of the principle of conservation of energy; adding energy to the. 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. This paper gives a review of the recent developments in FESS technologies. Kinetic energy can be described as “energy of motion,” in this case the motion of a spinning mass, called a rotor. The rotor spins in a nearly frictionless enclosure.

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### Flywheel energy storage

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### Flywheel Energy Storage Systems (FESS)

To maintain efficiency, the flywheel system is operated in a vacuum to reduce drag. The flywheel is connected to a motor-generator that interacts with the utility grid through advanced power electronics.

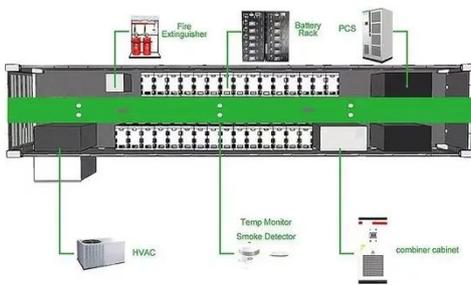


### DOE ESHB Chapter 7 Flywheels

A flywheel system charges by receiving energy electrically, converting electricity into kinetic energy using a motor, accelerating the rotor. A flywheel discharges by operating the motor as a generator ...

## Technology: Flywheel Energy Storage

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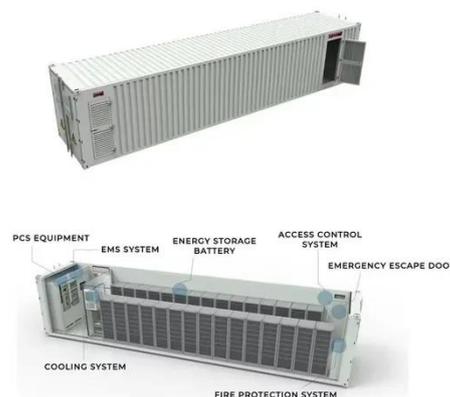


### The role of flywheel energy storage in decarbonised electrical power

A flywheel is a very simple device, storing energy in rotational momentum which can be operated as an electrical storage by incorporating a direct drive motor-generator (M/G) as shown in Figure 1.

## Flywheel Energy Storage System , Springer Nature Link

Flywheel energy storage stores electrical energy in the form of mechanical energy in a high-speed rotating rotor. The core technology is the rotor material, support bearing, and ...



### A review of flywheel energy storage systems: state of the art and



There is noticeable progress in FESS, especially in utility, large-scale deployment for the electrical grid, and renewable energy applications. This paper gives a review of the recent ...

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## High-performance flywheels for energy storage

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## A review of flywheel energy storage systems: state of the art and

The existing energy storage systems use various technologies, including hydro-electricity, batteries, supercapacitors, thermal storage, energy storage flywheels,[2] and others.

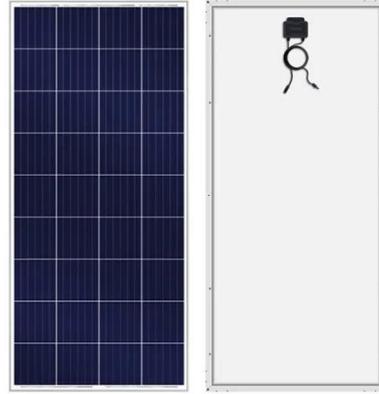
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## Flywheel Energy Storage

When external electric energy is

abundant, the motor is driven by an electric electronic device to rotate the flywheel and convert the electrical energy into storable mechanical energy.



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