WALMER ENERGY

Permanent magnet flywheel energy storage

Overview

Can a compact flywheel energy storage system eliminate idling loss?

Abstract: This article proposed a compact and highly efficient flywheel energy storage system (FESS). Single coreless stator and double rotor structures are used to eliminate the idling loss caused by the flux of permanent magnet (PM) machines. A novel compact magnetic bearing is proposed to eliminate the friction loss during high-speed operation.

What is a flywheel energy storage system?

Flywheel energy-storage systems have attracted significant attention due to their characteristics of high energy storage density, high efficiency, and long service life [5, 6, 7]. Flywheel energy-storage systems store energy in the form of mechanical energy and are only used for the short-term storage of electrical energy.

Why are permanent magnet synchronous machines used in flywheel energy-storage systems?

Therefore, various machines are utilized in flywheel energy-storage systems to fulfill actual requirements [13, 14]. Permanent magnet synchronous machines (PMSMs), as conventional machines, offer advantages such as high efficiency, high power density, low noise, and low vibration [15, 16, 17, 18, 19].

What is a high speed PMSM for magnetic suspended flywheel energy-storage system?

In , a high speed PMSM for magnetic suspended flywheel energy-storage system was investigated. With a three-stage-rotor structure, the proposed machine retains the characteristics of common PMSMs and has the advantages of easy manufacturing and assembling.

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