FTMRS SOLAR

Loss of flywheel energy storage

Overview

Can flywheel energy storage systems recover kinetic energy during deceleration?

Flywheel energy storage systems (FESS) can recover and store vehicle kinetic energy during deceleration. In this work, Computational Fluid Dynamics (CFD) simulations have been carried out using the Analysis of Variance (ANOVA) technique to determine the effects of design parameters on flywheel windage losses and heat transfer characteristics.

What is a flywheel energy storage system?

Fig. 1 has been produced to illustrate the flywheel energy storage system, including its sub-components and the related technologies. A FESS consists of several key components: (1) A rotor/flywheel for storing the kinetic energy. (2) A bearing system to support the ro-tor/flywheel.

What causes standby losses in a flywheel rotor?

Aerodynamic drag and bearing friction are the main sources of standby losses in the flywheel rotor part of a flywheel energy storage system (FESS). Although these losses are typically small in a well-designed system, the energy losses can become significant due to the continuous operation of the flywheel over time.

How much power does a flywheel lose?

The flywheel's steady-state power loss is less than 1% of the rated power. Many research works focus on control. Mahdavi et al. presents an enhanced frequency control system and its experimental verification for a FESS to reduce the frequency variations of the microgrid.

Loss of flywheel energy storage

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