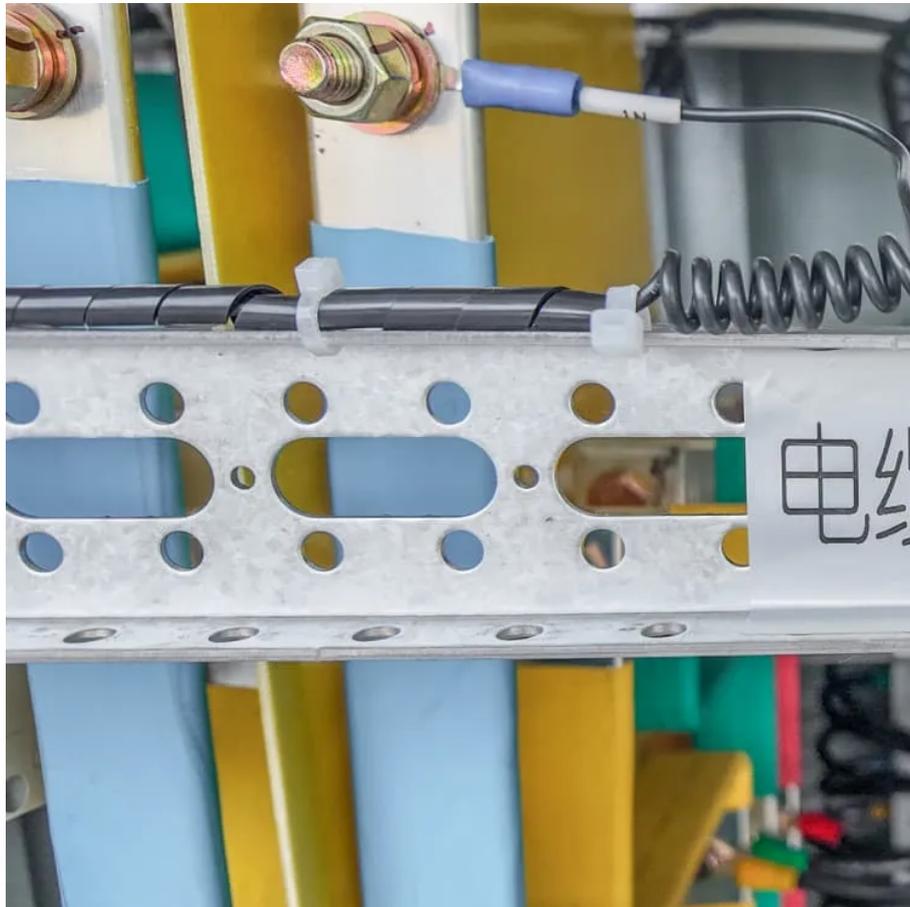


Flywheel energy storage torque





Overview

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.

How energy is stored in a flywheel rotor?

Energy is stored in a fast-rotating mass known as the flywheel rotor. The rotor is subject to high centripetal forces requiring careful design, analysis, and fabrication to ensure the safe operation of the storage device. 1. Introduction.

How can flywheels be more competitive to batteries?

The use of new materials and compact designs will increase the specific energy and energy density to make flywheels more competitive to batteries. Other opportunities are new applications in energy harvest, hybrid energy systems, and flywheel's secondary functionality apart from energy storage.

Are flywheel energy storages commercially available?

Flywheel energy storages are commercially available (TRL 9) but have not yet experienced large-scale commercialisation due to their cost disadvantages in comparison with battery storages (higher investment, lower energy density). Another challenge is the comparably high standby loss in FESS caused by the magnetic drag of the motor-generator.



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