

The Future of Flywheel Energy Storage





Overview

The core element of a flywheel consists of a rotating mass, typically axisymmetric, which stores rotary kinetic energy E according to (Equation 1) $E = \frac{1}{2} I \omega^2$ [J], where E is the stored kinetic energy.

What is the future of Flywheel energy storage systems?

By tapping into their potential, organizations can achieve greater efficiency, reliability, and sustainability in various sectors. The future of flywheel energy storage systems (FESS) is not just a matter of technological advancement; it is intertwined with the urgent global need for efficient, sustainable energy solutions.

Can a flywheel store energy?

A project team from Graz University of Technology (TU Graz) recently developed a prototype flywheel storage system that can store electrical energy and provide fast charging capabilities. Flywheels are considered one of the world's oldest forms of energy storage, yet they are still relevant today.

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.

What are the benefits of a flywheel?

Energy Storage: It captures excess energy produced, especially from renewable sources like solar and wind, preventing wastefulness. **Energy Release:** When demand spikes, the energy stored in flywheels can be released quickly, stabilizing the grid and balancing loads.



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