



How big is the potential of flywheel energy storage





Overview

A typical system consists of a flywheel supported by connected to a . The flywheel and sometimes motor-generator may be enclosed in a to reduce friction and energy loss. First-generation flywheel energy-storage systems use a large flywheel rotating on mechanical bearings. Newer systems use composite

For reference, according to the U.S. Department of Energy, flywheel energy storage systems can achieve an efficiency of up to 85%-90%, making them a reliable solution for energy management. The intermittency of solar and wind energy demands fast, reliable storage systems.

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The global flywheel energy storage market was valued at USD 1.3 billion in 2024 and is expected to reach a value of USD 1.9 billion by 2034, growing at a CAGR of 4.2% from 2025 to 2034. Flywheels are used for uninterruptible power supply (UPS) systems in data centers due to their instant response.

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.

The flywheel energy storage market is projected to grow from USD 1.4 billion in 2025 to USD 2.0 billion by 2035, at a CAGR of 4.2%. Utility will dominate with a 46.8% market share in 2025. The flywheel energy storage market is projected to reach USD 1.3 billion in 2025 and expand to USD 2.0 billion.

The flywheel energy storage market size is forecast to increase by USD 224.2 billion at a CAGR of 9.4% between 2023 and 2028. Market growth depends on several factors, including the significant expansion in the data center construction market, which is notably driving demand. One key trend shaping.

The flywheel energy storage market, currently valued at \$159.6 million in 2025, is projected to experience steady growth, driven by increasing demand for reliable and efficient energy storage solutions across diverse sectors. A compound annual



growth rate (CAGR) of 3.6% indicates a consistent.

and high power quality such as fast response and voltage stability, the flywheel/kinetic energy storage system (FESS) is gaining attention recently. There is noticeable progress in FESS, especially in utility, large-scale deployment for the electrical grid, and renewable energy applications. This.



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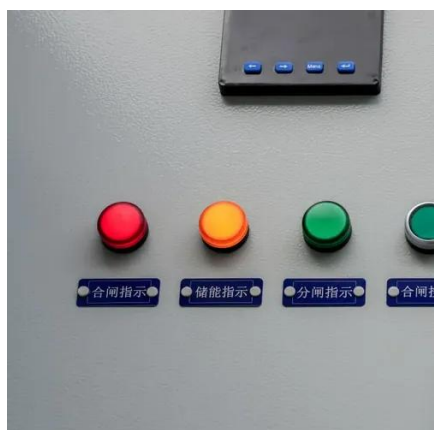
A review of flywheel energy storage systems: state of the art ...

Primary candidates for large-deployment capable, scalable solutions can be narrowed down to three: Li-ion batteries, supercapacitors, and flywheels. The lithium-ion ...

Flywheel energy storage

OverviewMain componentsPhysical characteristicsApplicationsComparison to electric batteriesSee alsoFurther readingExternal links

A typical system consists of a flywheel supported by rolling-element bearing connected to a motor-generator. The flywheel and sometimes motor-generator may be enclosed in a vacuum chamber to reduce friction and energy loss. First-generation flywheel energy-storage systems use a large steel flywheel rotating on mechanical bearings. Newer systems use carbon-fiber composite rotors



Flywheel Energy Storage Market Size to Worth USD 1.81 Bn by ...

Flywheel energy storage is valuable to renewable energy sources like solar and wind power because it offers quick-responding energy storage options that can improve grid ...

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CAGR of 9.4% between 2023 and 2028. Market growth ...



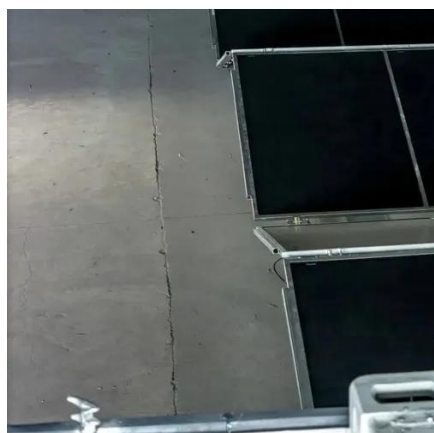
Flywheel Energy Storage Market , Global Market Analysis Report

Flywheel energy storage is advancing through demand from utilities, data centers, transportation, and industrial sectors. Its unique strengths in reliability and rapid discharge ...



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Flywheels are one of the world's oldest forms of energy storage, but they could also be the future. This article examines flywheel technology, its benefits, and the research from ...

[Flywheel Energy Storage Market Statistics, 2025-2034 Report](#)

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[Prospect of flywheel energy storage potential](#)

Flywheel Energy Storage System (FES) is gradually showing its importance in the market as an efficient way to store energy due to its longer usage time, faster charging and discharging

Flywheel energy storage



First-generation flywheel energy-storage systems use a large steel flywheel rotating on mechanical bearings. Newer systems use carbon-fiber composite rotors that have a higher ...



[Opportunities in Flywheel Energy Storage Market 2025-2033](#)

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[Development and prospect of flywheel energy storage ...](#)

Fig. 1 shows the comparison of different mechanical energy storage systems, and it is seen that the Flywheel has comparatively better storage properties than the compressed air ...





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