

What is gravity energy storage?

Family of gravity energy storage products that decouple power and energy while maintaining a high round-trip efficiency, without the need for specific topography. Hydrogen energy storage for multi-day resilience, designed to ensure the reliability of critical community infrastructure.

How does Energy Vault's gravity EVX storage system work?

Energy Vault's gravity EVx storage system is a giant rectangular building that largely runs automatically. Here's how it works. The bricks at the heart of the system each measure 3.5 by 2.7 by 1.3 meters (about 11 by 9 by 4 feet) and weigh 24 metric tons.

What is a gravity energy storage system (GESS)?

Gravity energy storage systems (GESS) for grid support and renewable energy integration. G-VAULT(TM) is a family of gravity energy storage products that decouple power and energy while maintaining a high round-trip efficiency.

Is gravity a solution to energy storage?

But without an easy way to store large amounts of energy and then release it when we need it, we may never undo our reliance on dirty, polluting, fossil-fuel-fired power stations. This is where gravity energy storage comes in. Proponents of the technology argue that gravity provides a neat solution to the storage problem.

Is gravity energy storage expensive?

Indeed, a 2022 US Department of Energy study concluded that gravity energy storage is relatively expensive in smaller installations. Where it's most economical is in high-capacity systems that generate power for relatively long periods of time -- 10 hours or more.

Does Energy Vault EVX reduce the cost of storage?

Energy Vault believes that, even though its EVx systems' maximum RTE is slightly lower than that of lithium-ion battery technology, the very long economic life of the assets reduces the "Levelized Cost of Storage" (LCoS)--in other words, the cost of each unit of storage spread over the facility's full lifecycle.

# ENERGY VAULT S GRAVITY-BASED STORAGE SYSTEM



In 2023, Energy Vault announced the commissioning of the world's first EVx gravity storage system in China. Energy Vault also recently announced three additional EVx GESS deployments of 368 MWh in China through a license and royalty agreement announced in early 2022, bringing its total announced projects in China to 3.7 GWh.



The first-of-its-kind, 100 MWh EVx GESS project was announced in May 2022. The new Gravity Energy Storage System (GESS) has a capacity of 25 MW, and the EVx system will be one of the world's largest long-term energy storage systems. It is constructed adjacent to a wind farm and national grid interconnection site to augment and balance China's national ???



science labEnergy Vault can, sequester these waste materials within the composite blocks of its gravity - based energy storage systems. Energy Vault's pipeline of customers includes many that are trying to also address the problem of sustainable disposal and/or beneficial re-use of coal combustion residuals, which is

# ENERGY VAULT S GRAVITY-BASED STORAGE SYSTEM



Energy Vault's EVx GESS systems are based on the proven physics and mechanical engineering fundamentals of pumped hydro, which currently accounts for about 90% of the world's energy storage



Gravity-based energy storage developer Energy Vault has started construction on its first commercial-scale project. The 100 MWh energy storage system is being built near a wind farm in Rudong, Jiangsu Province outside of Shanghai, China. The project aims to support China's goal of reaching a carbon peak in 2030 and carbon neutrality by 2060.

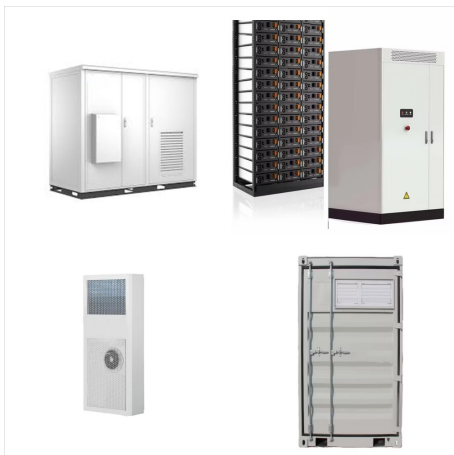


The all-mechanical system from Swiss-based Energy Vault uses automated stacking and unstacking of blocks weighing up to 35 tons (one ton is 1,000 kilograms, "Energy Vault Inc. is combining with a blank-check company to go public in a merger that values the gravity-based energy-storage company at roughly \$1.6 billion"

# ENERGY VAULT S GRAVITY-BASED STORAGE SYSTEM



Utilizing eco-friendly materials with the ability to integrate waste materials for beneficial reuse, Energy Vault's EVx??? gravity-based energy storage technology is facilitating the shift to a



The Switzerland and California-based company announced that it is entering the first phases of commissioning for its first commercial-scale gravity energy storage system (GESS). Slated to be fully grid-interconnected in Q4 2023, the gravity tower will mark the world's first non-pumped hydro gravity-based storage facility.



The 25 MW/100 MWh EVx ??? Gravity Energy Storage System (GESS) is a 4-hour duration project being built outside of Shanghai in Rudong, Jiangsu Province, China. The EVx ??? is under construction directly adjacent to a wind farm and national grid. It will augment and balance China's energy grid through the shifting of renewable energy to serve the State Grid Corporation of ???



# ENERGY VAULT S GRAVITY-BASED STORAGE SYSTEM



Once operational, the SEC will stand at an impressive 60 meters tall and house two EVy??? and four EVx??? modules. It will also showcase Energy Vault's EVc??? and EV 0 ??? water based gravity storage systems. The asset will enable Energy Vault to showcase proof of concept with new gravity advancements and construction techniques, continue to optimize existing technologies, ???



The system will be the world's first commercial, grid-scale gravity energy storage system that offers a more economical, Energy Vault's EVx??? gravity-based energy storage technology is facilitating the shift to a circular economy while accelerating the global clean energy transition for its customers. Please visit



Energy Vault's gravity-based technology can store wind and solar power longer than batteries. The steel tower is a giant mechanical energy storage system, designed by American-Swiss startup

# ENERGY VAULT S GRAVITY-BASED STORAGE SYSTEM



The EVx??? product platform introduces a highly scalable and modular architecture that can scale to multi-GW-hour storage capacity. EVx??? is the natural evolution that leverages all current performance attributes of Energy Vault's proven technology including zero degradation in storage medium, high round-trip efficiency, long technical life, a sustainable supply chain, and ???



Energy Vault Holdings announced the groundbreaking for the first EVx deployment for gravity based energy storage system in China. The 100 MWh EVx system is being built adjacent to a wind farm and national grid site in Rudong located outside of Shanghai to augment and balance China's national energy grid through the delivery of renewable energy to the grid ???



The collaboration is to develop a 100MW Hybrid Gravity Energy Storage System, a solution designed by Energy Vault for underground mines. EV0 gravity technology through a new water-based

# ENERGY VAULT S GRAVITY-BASED STORAGE SYSTEM



So, as a new kind of energy storage technology, gravity energy storage system (GESS) emerges as a more reliable and better performance system. GESS has high energy storage potential and can be seen as the need of future for storing energy. Figure 1: Renewable power capacity growth [4]. However, GESS is still in its initial stage. There are



Switzerland-based energy storage specialist Energy Vault Holdings Inc has been tapped to deploy a 100-MW hybrid gravity-based energy storage system at a mine owned by Sardinian state-run coal mining company Carbosulcis SpA which is designated to be transformed into a carbon-free technology hub. The system is specially designed by Energy Vault for ???

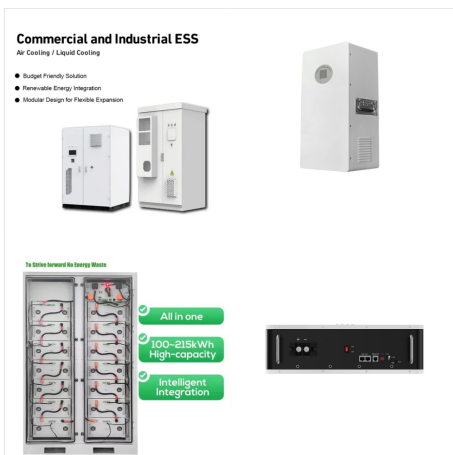


Switzerland-based energy storage specialist Energy Vault Holdings Inc has updated on developments in China, saying that the Rudong 25-MW/100-MWh EVx gravity-based energy storage system achieved China state grid interconnection and inverse power operation in December 2023. The Rudong EVx will be the world's first commercial, utility-scale non-pumped ???

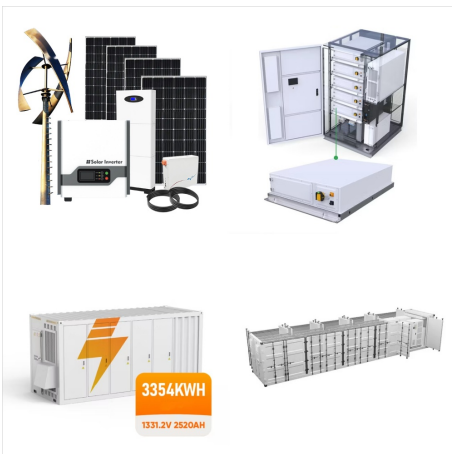
# ENERGY VAULT S GRAVITY-BASED STORAGE SYSTEM



China Tianying's recently announced projects bring planned EVx deployments in China to seven, totaling 3.26 GWh, or \$1+ billion in project scope. Additional EVx projects confirm the strategic value of the gravity energy storage technology for China, the largest energy storage market in the world, where Energy Vault collects a 5% revenue royalty. The process for state ???



More recently, Energy Vault has been building gravity energy systems that store big, heavy blocks inside what looks like a giant metal box. Pulleys and motors move the blocks around, horizontally and vertically. Still, the idea remains the same. Higher blocks store more energy, which can generate electricity when they later get lowered.



The hybrid energy storage system utilizes Energy Vault's new EV0??? modular pumped hydro gravity storage technology plus lithium-ion batteries, and powered by VaultOS??? energy management.