

# CHINA YINGLI GROUP FLYWHEEL ENERGY STORAGE



Suzhou Postec China headquarters (phase I) 338kw BIPV project. 2021-08-23. 453kW Hebei CPPCC BIPV office building. 2021-08-19. Yingli Energy Technology Group is one of the world's leading providers of BIPV products and integrated photovoltaic solutions, which aims to provide clean energy for all and built a Zero-carbon world.



Flywheels are an alternative to deep cycle batteries or molten salt for storing energy that can be transformed into electricity. Flywheel energy storage works by accelerating a rotor (flywheel) to incredibly high speeds and maintaining the energy in the system as rotational energy, which is converted back by slowing down the flywheel.



The Dinglun Flywheel Energy Storage Power Station broke ground in July last year. China Energy Construction Shanxi Power Engineering Institute and and Shanxi Electric Power Construction Company carried out the construction works. BC New Energy was the technology provider and Shenzhen Energy Group was the main investor.



Backed by Shenzhen Energy Group, the project's main investor, the facility's storage system employs solutions developed by BC New Energy, a startup specializing in advanced energy storage technology. Established in December 2017, the startup focuses on R& D, manufacturing, implementation, and industrialization of large-scale flywheel energy

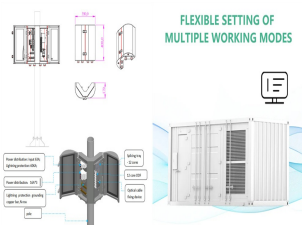


Image: China Energy Construction Digital Group and State Grid Hubei Integrated Energy Services. A compressed air energy storage (CAES) project in Hubei, China, has come online, with 300MW/1,500MWh of capacity. The 5-hour duration project, called Hubei Yingchang, was built in two years with a total investment of CNY1.95 billion (US\$270 million)

# CHINA YINGLI GROUP FLYWHEEL ENERGY STORAGE



China has connected to the grid its first large-scale standalone flywheel energy storage project in Shanxi Province's city of Changzhi. The Dinglun Flywheel Energy Storage ???



Our flywheel will be run on a number of different grid stabilization scenarios. KENYA ??? TEA FACTORY. OXTO will install an 800kW flywheel energy storage system for a tea manufacturing company in Kenya. The OXTO flywheel will operate as UPS system by covering both power and voltage fluctuation and diesel genset trips to increase productivity.



Compared to other countries, China's flywheel energy storage technology is lagging behind. There are, at present, no commercial or demonstration projects using flywheel energy storage. The most advanced research in this field in China is taking place at Tsinghua University, but we expect that commercial-sized installations will have to wait



Flywheel Energy Storage Systems (FESS) work by storing energy in the form of kinetic energy within a rotating mass, known as a flywheel. Here's the working principle explained in simple way, Energy Storage: The system features a flywheel made from a carbon fiber composite, which is both durable and capable of storing a lot of energy.



In China, the most widespread form of energy storage is pumped hydro, making up more than 90% of all storage capacity. But other forms of energy storage, such as batteries, flywheel, and compressed air storage, are catching up as the country's wind and solar installations grow.

# CHINA YINGLI GROUP FLYWHEEL ENERGY STORAGE



Today, FESS faces significant cost pressures in providing cost-effective flywheel design solutions, especially in recent years, where the price of lithium batteries has plummeted [[8], [9], [10], [11]] is reported that the capital cost per unit power for different FESS configurations ranges from 600 to 2400 \$/kW, and the operation and maintenance costs range ???



The Group's photovoltaic new energy industry covers three major areas in the key development areas of "Made in China 2025", accounting for six areas of the "eight national strategic new industries". Five Global R & D Centers. Yingli Energy Technology Group adheres to the development of both centralized and distributed photovoltaic power



The operation of the electricity network has grown more complex due to the increased adoption of renewable energy resources, such as wind and solar power. Using energy storage technology can improve the stability and quality of the power grid. One such technology is flywheel energy storage systems (FESSs). Compared with other energy storage systems, ???



The Wenshui Energy Storage Power Station project covers approximately 3.75 hectares within the red line area. The station is divided into four main functional zones: office and living service facilities, power distribution and step-up station, lithium iron phosphate energy storage area, and flywheel energy storage area.



The Dinglun Flywheel Energy Storage Power Station broke ground in July last year. China Energy Construction Shanxi Power Engineering Institute and Shanxi Electric Power Construction Company carried out the construction works. BC New Energy was the technology provider and Shenzhen Energy Group was the main investor.

# CHINA YINGLI GROUP FLYWHEEL ENERGY STORAGE



This paper analyzed the compensation policy of a thermal power plant frequency regulation in Central China. It obtained several key performance indexes of the flywheel energy storage that participated in fire storage with combined frequency modulation and conducted a performance test on a set of 500 kW/100 kW·h flywheel energy storage systems



The main components of a typical flywheel. 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 ???



This review presents a detailed summary of the latest technologies used in flywheel energy storage systems (FESS). This paper covers the types of technologies and systems employed within FESS, the range of materials used in the production of FESS, and the reasons for the use of these materials. Furthermore, this paper provides an overview of the ???



The flywheel energy storage system is a device that uses a high-speed rotating rotor to store energy, which has high requirements for the speed of the rotor and the stability of the magnetic bearing.



2 ? According to Energy-Storage.News, the Dinglun Flywheel Energy Storage Power Station is claimed to be the largest of its kind, at least per the site's developers in Changzhi.

# CHINA YINGLI GROUP FLYWHEEL ENERGY STORAGE



energy for all and built a Zero-carbon world. As a subsidiary Group of Yingli Group, the Group devotes to solar power generation for more than 30 years, including the complete industrial chain, such as BIPV products and raw materials manufacturing, Solar plant Construction O& M, and Solar + other industry development, etc. The Group persistently working on improving the solar ???



HENLI TECH cooperates with Swater Energy Group of the United States, and takes the lead in introducing its world-leading technical research and development team with 30 years of design experience, integrating world-class technical resources, and producing high-quality, competitively priced flywheel energy storage products. Among China top



A review of flywheel energy storage systems: state of the art and opportunities. March 2021; License; CC BY 4.0; Authors: Xiaojun Li. Pillar Group [108] st 2.9 kWh 625 kW 15 s X V arious.



Flywheel energy storage systems have gained increased popularity as a method of environmentally friendly energy storage. Fly wheels store energy in mechanical rotational energy to be then



Sinomach Heavy Equipment Group Co (Sinomach-HE) rolled out a new flywheel energy storage product on July 23. It is characterized by high energy storage density as well as high efficiency and low cost, and is pro-environment with longer service life and better adaptability. The 100 kilowatt (kW) and 200kW flywheel energy storage devices

# CHINA YINGLI GROUP FLYWHEEL ENERGY STORAGE

---



And it will be China's first flywheel + battery storage project used in frequency regulation when finished. The project has a budget of 33.72 million yuan, using a 5MW/5MWh BESS and a 2MW/0.4MWh flywheel storage system. Dec 17, 2018 Holley Group and Sermatec Sign First Energy Storage Supply Agreement Between Mainland and Taiwanese Companies