



Science and Technology Daily

VOL.4-NO.125

JANUARY 6-7, 2024

China's Innovation-Driven Development Flourishing

Thanks to years of dedicated efforts, China's innovation-driven development is full of energy, said Chinese President Xi Jinping in his 2024 New Year message, highlighting China's breakthroughs in science and technology.

Xi mentioned that the C919 large passenger airliner entered commercial service, the Chinese-built large cruise ship completed its trial voyage, the Shenzhou spaceships are continuing their missions in space, and the deep-sea manned submersible Fendouzhe reached the deepest ocean trench.

Products designed and made in China, especially trendy brands, are highly popular with consumers. The latest models of Chinese-made mobile phones are an instant market success, said Xi.

New energy vehicles, lithium batteries, and photovoltaic products are new testimony to China's manufacturing prowess, Xi added.

"Everywhere across our country, new heights are being scaled with dogged determination, and new creations and innovations are emerging every day," said Xi.

Xi noted that while pursuing its own development, China has also embraced the world and fulfilled its responsibility as a major country.

Xi mentioned the China-Central Asia Summit and the Third Belt and Road Forum for International Cooperation, China's two major diplomatic events at home last year, at which Xi hosted leaders from across the world. Xi said that he also paid visits to a number of countries, attended international conferences, and met many friends both old and new.

No matter how the global landscape may evolve, peace and development remain the underlying trend, and only cooperation for mutual benefit can deliver, Xi noted.

"We will work closely with the international community for the common good of humanity, build a community with a shared future for mankind, and make the world a better place for all," Xi said.

Source: XINHUA

WEEKLY REVIEW

Qinshan Nuclear Power Plant Sets New Record

The average capacity factor of the nine nuclear power units at the Qinshan nuclear power base in Zhejiang province, east China, reached 96.8 percent in 2023. This ranks No.1 among nuclear power bases with six or more units globally, compared with the data released by the World Association of Nuclear Operators, setting a new record for safe and stable operation of similar bases, according to the China National Nuclear Corp.

High-altitude Wind Farm in Xizang Begins Operation

The Omatingga Wind Farm, located in Nagchu of Xizang autonomous region at an average altitude of more than 4,500 meters above sea level, officially began operation on January 1. Once connected to the grid, this project will supply the city of Nagchu with 200 million kWh of green electricity annually.

New-generation Polar Icebreaker Debuts

The China-developed new-generation icebreaking research vessel named Jidi (polar region) made its debut in Guangzhou, Guangdong province, on December 29, 2023. The ship, weighing 5,600 tonnes, can sail in unlimited navigation areas in international waters. With a capacity of 60 crew members, it can carry drones, unmanned ships, underwater autonomous robots and other equipment.

China Wraps Up Space Plan with 3 Experimental Satellites

China launched three experimental satellites in space on December 30, 2023. The trio were transported into their preset orbit by a Long March 2C carrier rocket. The mission marked the fourth orbital deployment of satellites in the space-based Internet Technology Demonstrator series.



Competitors work on an ice sculpture during the 35th Harbin International Ice Sculpture Competition in Harbin, north-east China's Heilongjiang province, on January 2, 2024. (PHOTO: XINHUA)

Editor's Pick

New Power Storage Tech Bolsters Green Future

By WANG Xiaoxia

China has accelerated the development and utilization of renewable energy. However one problem that kept developers up at night was how to mitigate the influence of weather conditions on wind and photovoltaic power, which can affect power supply to the grid.

To solve this problem, the simplest way is to store the electricity and then stably discharge it. The new power storage technologies and their application across China are prime examples of innovation in action.

Innovative power storage tech

Recently, the first unit of a pumped storage hydropower station began operation in Qingyuan, northeast China's Liaoning province. The power station consists of two reservoirs at different elevations. When the power is abundant, the water in the lower reservoir is pumped to the higher one for storage. Acting like a giant battery, it can store hydroenergy and then release it to generate power during peak usage time. Its operation can realize the efficient conversion of energies and stabilize the power supply.

The other five units of the power station are expected to go live by March 2025. Once completed, it will save 158,000 tons of standard coal and reduce carbon

emissions by 375,000 tons per year, which will effectively improve the utilization of renewable energy such as nuclear power, wind power and photovoltaic power in Liaoning and even northeast China and eastern Mongolia. In addition to conventional pumped storage, innovative methods continue to emerge, such as molten salt energy storage, photothermal energy storage, and electrochemical energy storage. All these are now applied in power bases across China.

Take the molten salt energy storage as an example, which converts other energies into thermal energy and employs molten salts as a storage method to retain the thermal energy. Recently, the world's first electrically heated molten salt energy storage and steam injection test station was completed and put into operation in China's Liaohe Oilfield. With a thermal storage capacity of 15 MW, it can produce 48,000 tons of clean steam annually, replacing 3.13 million cubic meters of natural gas and reducing carbon emissions by 6,768 tons.

Smart integration system

With the implementation of energy-storage related policies and plans, and the continuous sci-tech progress, more and more projects are being completed.

Each power storage project is equivalent to a charging bank, meaning there are

more and more "charging banks" of different capacity and different types, hanging on the grid. So, how can these "charging banks" be safely and efficiently coordinated to cooperate with the power grid?

To solve this problem, "source-grid-load-storage" technology was used, which coordinates power generation, grid connection, load and energy storage. This smart technology uses energy storage systems to integrate renewable energy into the grid, in order to achieve flexible storage and a supply of energy.

In Ulanqab, Inner Mongolia autonomous region, you can see the world's largest "source-grid-load-storage" demonstration project. With investment and construction by the Three Gorges Group, seven new energy storage technologies are being tested here. The total installed capacity of demonstration project is 3.1 million kW, including 2.8 million kW of wind power, 300,000 kW of photovoltaics, and supporting energy storage facilities of 880,000 kW × 2 hours.

Currently, China has established a complete energy storage industry chain, including batteries, inverters, and energy storage systems. As of the end of September 2023, the total installed capacity of new energy storage projects in China had reached 21.23 million kW, ranking among the top in the world.

Haijing Empowers Seismic Prospecting in Deep Seas

By Staff Reporters

Recently, China's large deep-sea geophysical exploration vessel Haiyang Shiyou 720, equipped with a homegrown high-precision marine seismic prospecting system, set sail from Zhanjiang Port to Indonesia, which is of great significance to promote the Belt and Road cooperation.

The prospecting system, named Haijing, is the first of its kind to operate overseas, providing a Chinese solution to

global geological exploration, as well as supporting global offshore oil and gas development.

The Haijing system is composed of various functions, such as source control, trawl acquisition, integrated navigation, as well as a positioning and control system, which breaks the sinking depth limit of 22 meters and greatly improves the resolution of seismic data. It is also China's first independently developed marine seismic exploration and acquisition system using submarine cables.

Since it was equipped with the Haijing system in September 2022, the Haiyang Shiyou 720 has successfully completed a 3D seismic exploration area totaling 6,552 square kilometers in Chinese waters. It completed its first 3,000m-deep seabed geology exploration on December 21, 2023, which is also unprecedented in the country, according to its operator China National Offshore Oil Corporation.

International Cooperation

Green Silk Road Creates Chinese Solutions for Global Issues

By ZONG Shihan

In Kenya, wild animals such as giraffes migrate through the Mombasa-Nairobi Standard Gauge Railway (SGR) area, using passageways especially created for them to cross in safety. It's a spectacle of harmony between man and wildlife on the vast grasslands of East Africa.

In eastern Pakistan, the Karot hydropower station shines like a pearl on the Jhelum river. It is estimated to meet the power demands of around five million people with clean energy.

What's common to these two different projects in two different parts of the world is that they have both been implemented under the Belt and Road Initiative (BRI), which marked its 10th anniversary in 2023. Over the decade, China has collaborated with many countries to integrate green development in all areas of the BRI, which not only boosts the BRI partners' economic growth, but also provides Chinese solutions for global environment governance.

Chinese solutions for global problems

Since the launch of the BRI, China has implemented a lot of green development projects, becoming a leader in global environmental governance from a participant.

In 2015, China proposed to highlight the concept of ecological civilization in investment, strengthen cooperation for protecting the ecological environment and biodiversity and addressing climate change, and jointly build the Green Silk Road.

From 2017 to 2022, China successively issued roadmaps for the construction of the Green Silk Road such as the *Guidance on Promoting Green Belt and Road*, the *Belt and Road Ecological and Environmental Cooperation Plan*, and the *Green Investment Principles for the Belt and Road*.

As of November 2023, China had signed more than 200 cooperation documents with over 150 countries and more than 30 international organizations for the joint construction of the BRI. The Green Silk Road is a key component of that.

The Belt and Road International Alliance for Green Development has gathered over 150 Chinese and foreign partners, hosted over 70 thematic activities for the Green Silk Road, and reached over 160 countries and regions.

See page 2

New Graphic

China's Carbon Dioxide Emissions Per Unit of GDP Reduced over 51% from 2005 to 2022



Source: Ministry of Ecology and Environment
Designed by LIN Yuchen / S&T Daily

WECHAT ACCOUNT



E-PAPER

