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High-level Opening up Offers Global Business Opportunities

By WANG Xiaoxia

Chinese President Xi Jinping stressed the importance of remaining steadfast in comprehensively deepening reform and expanding high-standard opening up during his inspection tour of Guangdong in south China from April 10 to April 13.

Guangdong has been a pioneer and pacesetter of China's reform and opening up due to its unique institutional and policy advantages. In addition, the Guangdong-Hong Kong-Macao Greater Bay Area, as one of the most open and innovative regions in China, has brought new opportunities for foreign investors.

LG Display, one of the world's largest manufacturers and suppliers of LCD panels, OLEDs and flexible displays, has built a firm bond with Guangzhou, capital of Guangdong province, with constant upgrading of its investments over the past 17 years.

After investing in a module assembly factory and an LCD panel production line, LG Display constructed the world's largest and most advanced 8.5th generation (2,200 x 2,500mm) OLED production line in Guangzhou. The success of LG Display in Guangzhou has attracted more than 30 enterprises in the display industry, forming an industrial cluster in Huangpu District and Guangzhou Development Zone.

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The photo shows the Deep Sea No. 1 gas production and storage platform at the Lingshui 17-2 gas field off south China's island province of Hainan. (PHOTO: XINHUA)

International Cooperation

China, Brazil Strengthen Sci-tech Cooperation

By Staff Reporters

China's Minister of science and technology Wang Zhigang and Brazil's Minister of science, technology, innovation and communications Luciana Santos signed a memorandum of understanding to promote future sci-tech cooperation on April 14.

Through this pact, the two sides wish to explore new channels for cooperation in science and technology and industrial innovation research, and further promote the development levels of science and technology and the well-being of people in both countries in the form of joint research and exchange visits of scientists, according to the Ministry of Science and Technology.

Since the establishment of diplomatic ties in 1974, the two countries have garnered fruitful results through bilateral cooperation in the fields of space, climate change, forestry and energy.

In April 2010, the Tsinghua-UFRJ China-Brasil Center for Climate Change and Energy Technology Innovation was established to conduct joint research in clean energy and tackling climate change.

The sixth meeting of the China-Brazil High-level Coordination and Cooperation Committee in May 2022 saw agreements reached on cooperation in the space sector including promotion of the China-Brazil Earth Resources Satellite program.

That year also marked the 40th anniversary of the signing of the cooperation agreement in science and technology between the two countries.

According to Santos, Brazil's biofuel technology and China's new energy vehicle industry are at world leading levels, and the two countries have great potential for cooperation in addressing climate change, strengthening ecological and environmental protection, and developing new energy sources.

Editor's Pick

Deepwater Gas Production Becomes Smarter

By LU Zijian

The world's first 100,000-ton-level deepwater semi-submersible gas production and storage platform, Deep Sea No.1, has been operational since June 2021. To date, it has produced over 4.5 billion cubic meters of natural gas and transported over 450,000 cubic meters of gas condensate.

Deep Sea No.1 recently completed the construction and trial of its remote control system, enabling it to maintain safe and stable production even during typhoons.

Remote control made possible

The central control room of the vessel has a "normal/typhoon" mode switch. "When a typhoon or bad weather strikes, we switch to 'typhoon mode,'" said a staff member of Deep Sea No.1. The onshore control center will then take over operation from the central platform, allowing production to continue without interruption, he added.

Typhoons, which frequently occur in summer and autumn, pose the greatest challenge to the stable production of Deep Sea No.1. Although the production team strives to resume production as quickly as possible after a typhoon, they hope to eliminate such unstable factors to minimize the impact on downstream users brought by typhoon-caused shut downs.

However, there was no precedent for such a remote control system for ultra deepwater semi-submersible gas platforms.

After countless hours of calculations, modeling and debugging, the R&D team was able to determine key storm resistance indexes such as the safe range of draft. They also designed transformation and debugging solutions for over 270 sets of related equipment. The transformed equipment and specially built communication network function as a neural network, sensing the indicators of each operation, whereas the onshore control center acts as the brain.

The remote monitoring and production tests under extreme sea conditions proved that Deep Sea No.1 is capable of production via remote control, said Li Jinsong, general manager of Lingshui-Yacheng Operation Company of CNOOC's Hainan subsidiary.

According to Li, the implementation of the new system could reduce the shutdown time caused by extreme weather, potentially increasing the annual production of natural gas by 60 million cubic meters per year.

Tackling key technological problems

Deep Sea No.1 faced numerous technological challenges while extracting natural gas from a depth of 1,500 meters. However, the researchers and builders of the platform were able to overcome them. They developed three world's-first technologies, including the ability to store oil through columns of the semi-submersible platform.

Drawing inspiration from the liner of vacuum flask, the researchers built a 5,000-cubic-meter tank for gas condensate within each of the four floating columns of the platform. The tanks are equipped with specifically made protection cases to prevent oil leaking caused by collision.

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Oxygen Fully Regenerated in China's Space Station

By Staff Reporters

All of the oxygen resources are regenerated, and over 95 percent of water resources are recycled in China's space station, reducing the need for six tons of water supply every year, according to a space technology conference in Harbin, Heilongjiang province.

The environmental control and life-support systems on spacecrafts provide oxygen, water and other basic living conditions for astronauts. The system onboard China's space station consists of six regeneration subsystems that can complete oxygen production by water electrolysis, carbon dioxide removal, harmful gas removal, urine treatment, water treatment, and water production with carbon dioxide and hydrogen.

The maintenance of the environmental control and life-support system is crucial for in-orbit astronauts, said Cai Xuzhe, Shenzhou-14 taikonaut, at the conference, stressing that the stable operation of regeneration systems is vital for a steady supply of fresh oxygen and drinking water in space.

As a key technology for China's manned space missions, the environmental control and life-support system has been developed to the third generation over the past 55 years and realized the fundamental transformation from "replenishment" to "regeneration."

WEEKLY REVIEW

GDP Grows 4.5% in Q1

China's GDP increased by 4.5 percent year on year in the first quarter of 2023, according to the National Bureau of Statistics. The country's GDP grew three percent in 2022, and 2.9 percent in the fourth quarter of last year.

China Releases Color-coded Global Map of Mars

China National Space Administration and Chinese Academy of Sciences jointly released the country's first color-coded global map of Mars on April 24. The spatial resolution of the map is 76 meters, which will provide a better-quality base map for future Martian exploration projects and scientific research.

Three Commercial Liquid Rocket Engines Released

China Aerospace Science and Technology Corporation released three kinds of commercial liquid rocket engines on April 22. In particular, the YF-102 engine is the country's first open-type and reusable liquid oxygen-kerosene engine.

Red Lines Drawn for Ecological Protection

No less than 3.15 million km² of area across China, including no less than 3 million km² of land area, or over 30 percent of the country's total land area, and no less than 150,000 square km of sea area, has been demarcated within the red lines, according to the Ministry of Natural Resources.

New Graphic

New Oilseed Rape Species Opens Future for More Oil

By LIN Yuchen

Experiments on a new species of oilseed rape showed that growing rapeseed in China's vacant winter farm land in the southern regions is feasible, according to an April 16th statement from the Oil Crops Research Institute at the Chinese Academy of Agricultural Sciences (CAAS).

The results may significantly increase China's self-sufficiency proportion of vegetable oil.

As of now, only 30 percent of vegetable oil used in the country is domestic. The 2023 No. 1 central document proposes to fill up vacant winter farm fields in the southern regions of China with oilseed rape.

To realize this goal, however, is a challenge. According to Lu Jianwei, professor at Huazhong Agricultural University, the harvest of the latest crop before winter, when delayed, will result in low temperatures and a shortened period for growing oilseed rape, making it hard for typical species of the plant to yield quickly.

A research team at the CAAS tackled this challenge with success. It took six years for academician Wang Hanzhong and his team to develop a new oilseed species dubbed "Zhongyouzao No.1," which means early oil production.

Experiments have shown record high yield of the plant under the triple maturity model with short fertility period.

"Our self-sufficiency proportion of vegetable oil will increase by about 12 percent when Zhongyouzao No.1 is widely applied in China," said Wang Xinfa, researcher at CAAS.

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