



REINFORCING ECOLOGICAL PROTECTION



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WEEKLY EDITION

Accelerating 6G Network R&D

By Staff Reporters

On the back of China building the world's largest and most advanced 5G networks, the Ministry of Industry and Information Technology (MIIT) is supporting the industry to develop and promote 6G networks, said Jin Zhuanglong, minister of MIIT, during this year's Two Sessions.

MIIT has supported the industry to set up the IMT-2030 (6G) Promotion Group. It is now the flagship platform in China to promote 6G R&D and international cooperation. On June 2, 2022, the group signed an MoU with Europe's 6G-IA to further promote cooperation on 6G.

The success of China's 5G networks has also laid solid foundation and shared experience for the development of next-generation networks.

China has built more than 2.34 million 5G base stations, and the number of 5G mobile phone users exceeds 575 million. More than half of the 97 sectors classified for national economic activities have applied 5G technology, such as mining, ports, electricity and large aircraft manufacturing, said the minister.

By the end of this year, China's 5G base stations are expected to exceed 2.9 billion. The 5G networks will cover wider areas and be applied in more industry sectors, with a focus on manufacturing, according to MIIT, which plans to build more than 10,000 factories with applied 5G technology during the 14th Five-Year Plan period (2021-2025).

Jin believed that the successful collaboration between the government, enterprises, and research institutes in the development of 5G networks has paved the way for future advancements in 6G technology.

With the advantage of a large domestic market and complete industrial system, China will pool strength from industries and institutions and carry out more international cooperation projects, so as to accelerate the 6G-network R&D and explore its application scenarios, according to MIIT.

International Cooperation



Wind turbines operate at the wind farm in the Xinghua Bay of Fuqing in south China's Fujian province. (PHOTO: XINHUA)

Editor's Pick

Exploring and Protecting Our Oceans

By LU Zijian

To build China into a maritime power has not been possible without the modern era backbone of science and technology. From exploring the deepest pleted operations at the deepest point of the Diamantina Trench in the southeastern Indian Ocean, and was successfully retrieved by the scientific research ship Tansuo-1. This was the first time in human history for a vessel to reach the This was the first time in the world that large-scale and systematic manned deep diving surveys in the Kermadec Trench had been carried out. The samples collected provided crucial support for understanding the evolution and ad-

In-orbit Test Ushers in More Space Experiments

By LIN Yuchen

The first in-orbit ignition test in the combustion cabinet of the Mengtian space lab signaled completion of the combustion science experiment system of the Chinese space station, as well as the accuracy of space experiment procedures, said Zheng Huilong, scientist at the Chinese Academy of Sciences (CAS), adding that this lays a great foundation for the following space science combustion experiments.

The ignition test used methane fuel and was divided into two segments, which lasted in about 30 seconds. Photographs of the flame taken in space and on Earth differ from each other, in that the outer ring of the former is obviously narrower than the flame on Earth. This is because of a lack of buoyancy force, said Liu Youcheng, associate professor at Tsinghua University, adding that without the interference of buoyancy convection and sedimentation of particles or droplets, combustion experiments in a micro-gravity environment may facilitate the development of combustion theories and models.

Over 40 in-orbit combustion experiments are on schedule and expected to be carried out before the end of 2023. These experiments are part of 10 research plans in microgravity combustion science to realize 79 scientific objectives, such as flame synthesis nanomaterials and flame carbon soot generation.

The first batch of space station experiment data that may contribute to China's micro-gravity combustion study was obtained; it will support relevant scientific research in ground and space combustion applications and materials, according to CAS.

A series of experiments have been carried out in the scientific experimental cabinets of the Mengtian lab since October 2022, when it was first launched. The cabinets operate stably and can be used to conduct more experiments in the future, according to CAS.

WEEKLY REVIEW

ODCC Launches Far-reaching Maritime Cooperation

By Staff Reporters

A Qingdao - based international cooperation center, named the Ocean Decade Cooperation Center (ODCC), officially opened its doors last month. It intends to boost China's ocean governance and economy in accordance with the UN Decade of Ocean Science for Sustainable Development (2021-2030). The UN- endorsed Decade Collaborative Centre on Ocean-Climate Nexus and Coordination opened at the same time.

The ODCC was a tripartite endeavor of the Ministry of Natural Resources (MNR), Shandong Provincial Government and Qingdao Municipal Government. *See page 4*

spot on Earth and making use of oceanic resources, to protecting the oceanic environment, China has found its own way to carry out these achievements.

Deep into the sea

On November 10, 2020, China's deep - sea manned submersible Fendouzhe, set a national record by diving to a depth of 10,909 meters in the Mariana Trench, the world's deepest natural trench in the western Pacific. "This is impressive even by global standards," said Hu Zhen, deputy chief designer of the submersible.

The journey of Fendouzhe did not end there. On January 22, the vessel com-

deepest point of the Diamantina Trench.

To date, Fendouzhe has dived more than 60 times, with many of the depths exceeding 10,000 meters. In total, Fendouzhe and China's two other deep-sea manned submersibles Jiaolong and Shenhai Yongshi, have made nearly 1,000 deep dives.

China has also been active in cooperating with other countries in deep sea exploration. A joint China - New Zealand deep-sea expedition took place in November 2022 using Fendouzhe, which dived several times in the Kermadec Trench in the Pacific Ocean, with two of the diving depths surpassing 10,000 meters. aptation mechanisms of life in an abyss and the evolution of the sedimentary environment of the abyss.

Making use of oceanic resources

The ocean is equipped with abundant resources, and could greatly support human life if properly developed.

Nicknamed flammable ice, methane hydrate is regarded as an ideal clean energy substitute. It is also efficient, as a car could drive 50,000 kilometers on 100 liters of methane hydrate, a huge leap from 300 kilometers on 100 liters of natural gas. In addition, China has the largest reserve of methane hydrate, which means abundant exploration prospects. *See page 2*

Tianzhou-6 to Launch in May

The cargo craft Tianzhou-6 has been transported to the Wenchang Spacecraft Launch Site in Hainan province and will be launched in May, the China Manned Space Agency (CMSA) said on March 12. The crew members for the two manned missions Shenzhou-16 and Shenzhou-17 have also been selected and are now undergoing training.

Fendouzhe Completes First Manned Deep-sea Research near Oceania

Carrying the deep-sea manned submersible Fendouzhe, China's scientific research ship Tansuo-1 returned to Sanya, Hainan province, on March 11, after completing the first international manned deep-diving scientific research mission in waters near Oceania.

Tianhui-6 Twin Satellites Successfully Sent into Space

China successfully launched Tianhui- 6 twin satellites, Tianhui- 6 A and Tianhui- 6 B, on March 10 from the Taiyuan Satellite Launch Center in Shanxi province, and later entered the planned orbit. The satellites will be used for geographic mapping, land resource survey, scientific experiments and other missions.

Asia's Deepest Horizontal Well Drilled in Tarim Oilfield

China completed drilling a well at a depth of 9,396 meters in Tarim Oilfield, Xinjiang Uygur Autonomous Region, making it the deepest horizontal well in Asia. This marked the Tarim Oilfield entering a new phase of oil and gas exploration at a depth of 9,000 meters.

WECHAT ACCOUNT







Evolution of Homegrown Oil-Gas Drilling Technology

New Graphic



By Staff Reporters

Over more than 12 years' development, Xuanji, China's homegrown oil and gas drilling system has worked well in 1,000 wells, with an accumulated drilling distance of one million meters, said its developer China National Offshore Oil Corporation (CNOOC) on March 3.

The Xuanji system consists of rotary steerable drilling (RSD) and loggingwhile-drilling (LWD) technologies for efficient exploration of oil and gas. With it, engineers can accurately control the drill bit thousands of meters underground to target oil layers and remotely drive the drill to stably traverse more than 1,000 meters horizontally, or obliquely, in the

one - meter thin oil layer, according to CNOOC.

Meanwhile, the system can analyze stratigraphic data in real time, thus largely reducing the exploration of oil and gas resources cost. It is widely used for the efficient development of oil, gas, shale gas and coal bed gas extraction.

However, RSD technology had been monopolized by three international oilfield service companies in the U.S. for more than 20 years, until China successfully developed Xuanji and put it into commercial use in 2014.

Since its first commercial use, the Xuanji system has been put through tens of thousands of reliability verifications, structural optimizations and upgrades. Currently, its success rate has reached 92 percent, a global leading level, said Shang Jie, an engineer from the CNOOC.

The system has been gradually promoted in oil or gas fields across China and along its coastal lines, and has been exported to countries such as Indonesia and Iraq.

On April 20, 2022, the first intelligent production line using the Xuanji system was put into operation in Foshan city, south China's Guangdong province. In August of that year, CNOOC launched a global service center for the Xuanji system, which can provide 24/7 online support for 12 countries and regions simultaneously.

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