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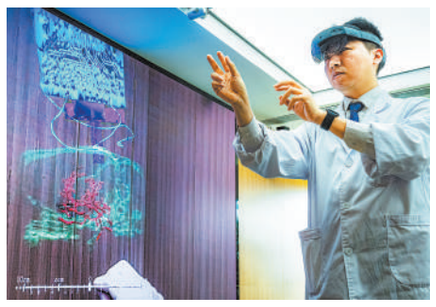

NEW POLICY TO SPUR BCI INDUSTRY

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INTO TECH PARK · XI'AN

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Innovation Pathway

Igniting Innovation on the Roof of the World

By YANG Yuhang & BI Weizi

In Dingjie, a county in Xizang autonomous region, southwest China, Tibetan medicine practitioner Suolangdunzhu uses digital technologies to make herbal-based medicine.

"In the past, we relied on experience, but now we rely on data," Suolangdunzhu said. "The efficacy (of the medicines) is stable, and so are sales."

This epitomizes the tremendous changes Xizang has undergone over the past six decades, empowered by technology and innovation. Last year, its GDP rose to 276.5 billion RMB, a 155-fold increase in these 60 years, and clean energy now accounts for over 90 percent of Xizang's installed capacity.

Supercomputing power drives digitalization

Yajiang-1 is Xizang's first large-scale intelligent computing center, located in the Yarlung Zangbo River Valley at an altitude of 3,600 meters. Han Shuangshuang, head of Xizang Yajiang Computing Science and Technology, said the project has a planned computing capacity of 2,000 P in the first phase. It is equivalent to the computing power of 20 million high-end servers running simultaneously. "Thanks to Xizang's uniquely low temperature, low oxygen, sulphur and humidity, the annual power usage is only around 1.15, far below the industry average of 1.5," Han said.

This cloud-based engine provides AI-assisted analysis for remote diagnosis and treatment of high-altitude sickness and supports local smart tourism by processing tourist data in real time. In 2024, Xizang recorded 63.89 million tourist visits from home and abroad, an increase of 15.8 percent year on year.

The center is also a critical foundation for the digital preservation of ancient Tibetan texts.

Barley sees breakthrough

Xizang's Jiangzi county is known as the home of highland barley. Here, the world's first dedicated highland barley grain production line is operating at full capacity. The golden, plump barley kernels undergo 12 intelligent processes, including temperature-controlled germination, low-temperature drying and ultra-fine grinding. The result is snow-white barley flour and premixes.

The production line has an annual production capacity of 13,000 tonnes of refined highland barley flour and 26,000 tonnes of baking premixes. It is estimated to generate an annual output value of over 300 million RMB. *See page 3*

Bridges over the Lhasa River are pictured in Lhasa, southwest China's Xizang autonomous region, July 30, 2025. (PHOTO: XINHUA)

STI Frontier

Smart Energy Systems Power Drones

By Staff Reporters

At the foot of Mount Huangshan in Anhui province, an industrial drone glides over the green leaves in a tea garden. It doesn't need to frequently return for charging, and on a single flight can complete the monitoring and early warning of pests and diseases across the entire garden.

The drone is powered by a high specific energy hydrogen-lithium hybrid power system independently developed by a team led by Chen Zhongwei, a researcher at the Dalian Institute of Chemical Physics, Chinese Academy of Sciences. It provides energy solutions that adapt to extreme environments, and has ultra-long flight times and high flexibility for low-altitude aircraft, which will promote the technological upgrading and application of China's low-altitude industry.

Improving the battery capacity

Traditional lithium battery-powered drones generally have a battery life of only 30 to 60 minutes and their load-carrying capacity is limited. Their performance significantly declines in complex environments such as mountainous areas, high temperatures, and extreme coldness. Chen's team has targeted the demand for energy systems in low-altitude aircraft and developed two core technologies.

The technologies, namely high specific energy ultra-low temperature battery and high specific energy hydrogen-lithium hybrid technology, have conquered the problems of short endurance and small load capacity of industrial drones.

In the extremely cold test at -36°C in Mohe, Heilongjiang province, high specific energy ultra-low temperature lithium batteries can power six-rotor drones to complete stable flight and cargo transportation tasks, Zhang Meng, the team's person in charge of power supply technology, told *Science and Technology Daily*.

The battery's operating temperature range is from -40°C to 50°C. It can maintain a discharge capacity of over 80 percent at -40°C and can still be charged at -20°C. With a stable power output, it has even served polar scientific expeditions.

"We equipped the drone with a dual-engine," said Chen, explaining that his intelligent system dynamically coordinates lithium batteries and hydrogen fuel cells, which not only makes up for the slow dynamic response of hydrogen fuel but also avoids deep discharge of lithium batteries.

High-efficiency operation

The core of this "dual-engine" system lies in the precise scheduling of the intelligent energy management system.

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China, Africa Jointly Promote Right to Development

International Cooperation

Edited by WANG Xiaoxia

To support international dialogue on human rights and cooperation among countries on the basis of equality and mutual respect and to pool the strength of the Global South, the first China-Africa Human Rights Seminar was held in Ethiopian capital Addis Ababa on August 22.

This is a dialogue platform established to implement the Forum on China-Africa Cooperation (FOCAC) Beijing Action Plan (2025-2027) and enhance exchanges and cooperation between China and African countries in the field of human rights.

At the event themed "Building the China-Africa Community with a Shared Future and Working Together to Realize the Right to Development," participants from China and African countries shared their insights, built consensus and provided wisdom for the Global South.

China is the largest developing country, and Africa is the continent with the largest number of developing countries. The two share similar ideas and aspirations, and have a profound understanding of each other.

The aspiration for world-class integrated infrastructure in the African Union's Agenda 2063 is highly consistent with the vision of the China-proposed Belt and Road Initiative and the 10 Partnership Actions of the FOCAC and other cooperation frameworks.

The major infrastructure projects built by China in Africa, such as the Addis Ababa-Djibouti Railway and the Mombasa-Nairobi Railway, are helping African countries turn their blueprints into reality.

For developing countries, the rights to subsistence and development are basic human rights of paramount importance. Through cooperation, development was realized, and through development, the human rights have been promoted.

In sustainable development, Africa is home to 40 percent of the world's solar energy, 32 percent of wind energy and 12 percent of hydropower resources, and has huge potential for the development of renewable energy. *See page 3*

Informatization Makes Strides in 2024

By LU Zijian

China's informatization development made significant achievements in 2024, speeding up Internet and IT innovation, and digital and smart life service popularization, boosting cybersecurity, and deepening international cooperation, according to a report released by the Cyberspace Administration of China on July 30.

The report noted that the country's innovative development capability was greatly strengthened in 2024. The ability to develop and manufacture integrated circuits has been enhanced, and frontier innovative achievements in quantum information, brain computer interface and digital twin tech are constantly emerging.

The technological capability of generative artificial intelligence (AI) continuously improved. By the end of 2024, there were 302 generative AI services filed, with the total number of registered users surpassing 600 million. Many of the large AI models like DeepSeek led the world in terms of product performance.

The 5G air-to-ground technology was successfully developed and completed the test verification. Technical tests for 6G were conducted for key technologies like wireless AI.

The competitiveness of the digital industry was steadily improved, with the added value of core industries of digital economy making up 10 percent of China's GDP. The scale of AI core industries reached nearly 600 billion RMB, covering upstream and downstream key processes like algorithms, data, platforms and application.

Digital technologies and real economy were also deeply integrated. Additionally, the integration of new technologies like AI and robots with agricultural production and operation was accelerated. Meanwhile, over 200,000 agricultural unmanned aerial vehicles across the country, operated on more than 400 million mu (about 266,666.67 square kilometers) land per year.

Cumulatively, 421 national demonstration factories, over 10,000 provincial digital workshops and smart factories, and 700 high-level 5G factories were nurtured.

Technologies like AI and digital twin were applied in over 90 percent of the demonstration factories.

Digital and intelligent technologies also greatly facilitated public services. There were over 3,700 Internet hospitals nationwide, and the remote medical service network covered all cities and counties, extending gradually to communities and villages.

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New Graphic

WEEKLY REVIEW

Chinese Extravehicular Spacesuit B Supports 20 EVAs

According to the China Astronaut Research and Training Center, the extravehicular spacesuit B, worn by astronaut Chen Dong during the third series of extravehicular activities (EVAs) by the Shenzhou-20 crew aboard China's orbiting space station on August 15, has supported 20 EVAs in total. The extravehicular spacesuit B has been used by 11 astronauts during eight manned spaceflight missions.

99.99997% Purity Helium Gas Produced

The first domestic unit capable of extracting ultra-pure helium gas of 6N9 grade from natural gas recently passed the acceptance test. The facility in Shaanxi province produced helium with 99.99997% purity and neon impurity content below 0.3 ppm from natural gas in its first operational run. This is a breakthrough in helium extraction from low-abundance natural gas for China.

Quantum Electromagnetic Fields Sensed at Picosecond

Researchers from France and Finland have developed a technology of quantum sensing of time-dependent electromagnetic fields with single-electron excitations. Within a timescale of picosecond (one trillionth of a second), this technology can detect both the strength of the electromagnetic field and its quantum fluctuations. It may lead to new tools for manipulating quantum electromagnetic fields directly on-chip.

New System Avoids Objects to Deliver Massive Data

Ultrahigh frequency bandwidths are easily blocked by objects. However, researchers from Princeton University have developed a system that shapes transmissions to avoid obstacles coupled with a neural network that can rapidly adjust to a complex and dynamic environment.

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