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WEEKLY EDITION

International Cooperation

China, France Reach Sci-tech Cooperation Pact

By Staff Reporters

China and France signed pact on April 6 on future sci-tech cooperation, pledging to build a China-France carbon neutralization center and an exchange program targeting researchers in the science and technology fields, referred to as sci-tech partners in the related pact.

Wang Zhigang, minister of science and technology of China, and Catherine Colonna, minister for Europe and foreign affairs of France, signed the agreement on behalf of the two governments.

Through the establishment of the cooperation mechanism, China and France hope to promote long-term scientific and technological exchanges and cooperation between Chinese and French research institutions, focusing on the field of carbon neutrality, and jointly support exchanges and visits between Chinese and French research teams to make new contributions to address global challenges such as climate change together, according to the Ministry of Science and Technology of China.



A video on S&T Daily's work in international sci-tech communication is displayed at the entrance of the Shenzhen Convention and Exhibition Center where the 21st Conference on International Exchange of Professionals is held. (PHOTO: LU Zijian/S&T Daily)

CIEP 2023 Highlights Int'l Professional, Innovation Exchange

By LU Zijian

China prioritizes sci-tech innovation as the central element of its national development plan. Moving forward, China will further expand cooperation and exchanges from a global perspective, actively engage in the global innovation network, and promote sci-tech exchanges and cooperation on a larger scale, across broader fields, at deeper level and to higher standards, said Zhang Guangjun, vice minister of science and technology, at the 21st Conference on International Exchange of Professionals (CIEP 2023) on April 15 in Shenzhen, south China's Guangdong province.

Zhang said that China will accelerate the work in talent exchange to build China into a major world center of innovation and industry professionals. Vice Governor of Guangdong Province Wang Xi said that Guangdong sincerely welcomes talented personnel from all over the world to display their talents and realize their dreams on this land of innovation and business cultivation.

Expressing his hope for consistent and concrete cooperation between China and Japan, Kazuki Okimura, honorary president of the Japan Science and Technology Agency (JST), said the agency is now conducting a short-term sci-tech exchange program for teenagers in China and other Asian countries, aiming to motivate the passion of young researchers for sci-tech exploration and enhance exchanges in the area between Japan and other Asian countries.

Jointly hosted by the Ministry of Science and Technology and Shenzhen Municipal People's Government, CIEP 2023 commenced on April 15 with nearly 10,000 government representatives, experts, scholars and high-end talents in attendance.

With the theme "Promoting Scientific and Technological Innovation, Seeking Common Development and Benefiting Global Talents," CIEP 2023 incorporated exhibitions of international sci-tech innovation and talent exchange, forums and activities.

An online version of the CIEP 2023 focused on a virtual exhibition hall, forums, project matchmaking, online recruitment and other online services, with regular services provided throughout the year.

Editor's Pick

Inflatable Silos Embark on Low-carbon Grain Storage

By Staff Reporters

Grain storage is well recognized as a vital part of the marketing, distribution and food security system.

To improve grain storage capacity, four giant grain silos were built in Chengdu, capital of Sichuan province. With a height of 36.1 meters and a diameter of 23 meters, each silo can store 7,500 tons of grains, equivalent to the annual consumption of 70,000 adults.

Technological transformation

The grain silos in Chengdu have applied a combined structure of inflatable membranes, steel and concrete. Inflatable silos are comparable to conventional ones in construction, but boast nearly 30 percent energy savings in operation, according to developer China Grain Reserves Group (SINOGRAIN).

The inflatable grain silo was innovated from the transformation of coal storage technology. In 2017, an inflatable membrane reinforced concrete spherical silo from China National Coal Group (China Coal) made its debut at a state-owned enterprises (SOE) innovation exhibition in Beijing, drawing attention from the SINOGRAIN delegation.

Adopting the novel construction technology and a special structure designed for excellent air-tight thermal insulation performance, greatly reducing energy consumption has the company's researchers wondering if the same technology could store grain.

However, grain storage is more complicated than coal, as it requires consistent temperatures below 20°C and stable humidity and the walls of the silo must be smooth. These challenges were the tip of the iceberg, said Yu Pengbiao, director of the Research and Design Center

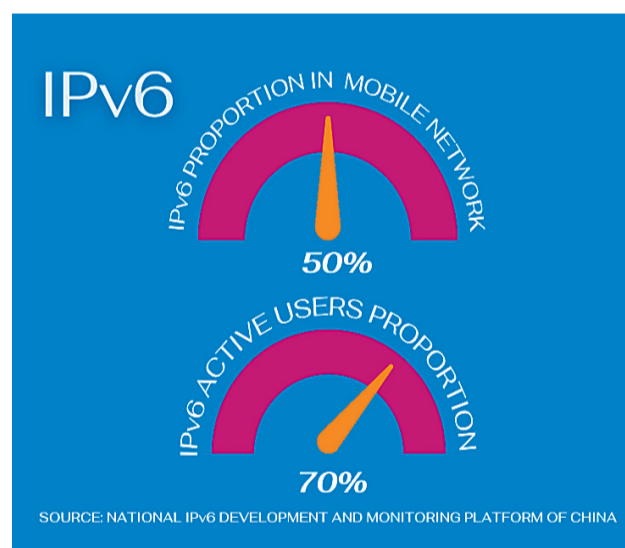
of SINOGRAIN Chengdu Grain Storage Institute. He added that such technological transformation cannot be accomplished by a single enterprise, instead, it asks for multi-field cooperation. Thus, SINOGRAIN and China Coal, two central SOEs, jointly set up an R&D team for the inflatable grain silo in 2017.

Innovative research method

Xue Fei joined the research team after finishing graduate school. He was excited to be exposed to such an important project right after graduation. Soon, Xue found challenges came one after another.

"For example, the inflatable membrane structure consists of three main layers — polyester, polyvinyl chloride, polyvinylidene fluoride. What is the appropriate thickness deviation rate for each layer? How to avoid deformation of the structure after inflation?" Xue said to S&T Daily. See page 2

New Graphic



WEEKLY REVIEW

"Artificial Sun" Achieves Breakthrough

The experimental advanced superconducting tokamak (EAST), or the Chinese "artificial sun," achieved a steady-state high confinement plasma operation for 403 seconds on April 12, a key step toward a fusion reactor.

Solar Observation Probe Shares Data

The Advanced Space-based Solar Observatory (ASO-S), nicknamed Kuafu-1, started to share its quasi-real-time observation data with scientists from home and abroad since April 12, according to the Purple Mountain Observatory under the Chinese Academy of Sciences.

Dinosaur Tracks Found in Restaurant

An international team of paleontologists have confirmed that the fossilized footprints found in a restaurant in southwest China were left by long-necked dinosaurs that lived on Earth around 100 million years ago. Their findings were published in the journal *Cretaceous Research*.

Shenzhou-15 Crew Complete 4th Spacewalk

The Shenzhou-15 taikonauts on board the orbiting Chinese Tiangong space station completed their fourth spacewalk, the China Manned Space Agency said on April 15, setting a domestic record for the most spacewalks by a single crew.

By LIN Yuchen

Tea picking, mainly done by hand with a short and intensive picking period, has seen a technological transformation with AI-powered robots. In China's southeast province Zhejiang, known for Longjing tea or Dragon Well tea, robots developed by Professor Wu Chuanyu of Zhejiang University of Science and Technology are now seen using mechanical arms to precisely pick tea leaves in local plantations.

A large number of photos of tea tree buds and leaves were input into the tea picking robot system in early stage, according to Associate Professor Gui Jiang-

sheng from Wu's research team. It can then remember the shape and texture of the buds and leaves, and summarize their characteristics by producing its own photos. The more photos input, the richer the robot's knowledge base is, providing more accurate recognition of tea trees.

The technology uses a small pair of scissors at the end of a robotic arm; it finds the petiole of the buds according to the positioning information. With a single cut, the buds will be separated from the branch, while a negative pressure suction tube attached to the end of the robotic arm absorbs the cut buds into a container in the robotic arm.

The research team revealed that the AI-powered tea picking robot currently takes about 1.5 seconds per tea leaf, still lagging behind human speed.

The recognition accuracy of these intelligent robots is about 86 percent, with a success rate of 60 percent in tea picking.

"This proves intelligent tea picking is feasible, but there is still a long way to go in the future to turn feasible into usable and good," said Professor Chen Jian-neng, member of the research team, adding that the robot is still in the laboratory stage, and the team will continue to develop it to improve picking efficiency and picking quality.

Bolstering International Exchange of Talents

By LU Zijian

A special exhibition section for overseas professional institutions was set up at the 21st Conference on International Exchange of Professionals to improve interaction efficiency in international and domestic cooperation and talent exchanges.

Numerous overseas exhibitors have already engaged in cooperation projects with local governments, enterprises and organizations in China.

Pasi Halmari, program manager in transnational education from Haaga-Helia University of Applied Sciences in Finland, told S&T Daily that their connection with China started more than a decade ago, when the university sent experts from Finland to work on the service quality and delivery of Wuxi Ninth Hospital in Jiangsu province.

Later, in collaboration with the Shanghai Municipal Education Commission, the university provided training to about 150 vocational teachers.

"I don't see any obstacles from our Chinese counterpart for the collaboration between Chinese universities or polytechnics and the Finnish universities of applied sciences," said Halmari, adding that "We are serious about establishing a long-term connection with China." See page 3

WECHAT ACCOUNT



E-PAPER

