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Deepening Integration of Sci-tech & Industrial Innovation

By TANG Zhexiao & LIU Yin

China has recently issued a guideline on deepening the integration of sci-tech innovation and industrial innovation, aiming to achieve high-level sci-tech self-reliance.

The document, released by the General Office of the Communist Party of China Central Committee and the General Office of the State Council, adopts both goal-oriented and problem-oriented approaches and lays out a top-level design covering overall requirements, objectives and implementation pathways, according to an official of the Ministry of Science and Technology.

An eight-part framework featuring six priority tasks is put forward. These tasks include supporting the development of a modern industrial system through high-quality sci-tech supply, bolstering enterprise-led industry-university-research integrated innovation, and improving the efficiency of the holistic allocation of innovation resources.

Links between innovation and industrial chains will be strengthened. Scenario-driven innovation will be scaled up via demonstration initiatives for new technologies, new products and new application scenarios, with intensified efforts to cultivate and open up such scenarios.

The guideline sets out three avenues to underpin the modern industrial system:

◆ Securing decisive breakthroughs in key core technologies to boost the self-reliance and controllability of industrial chains. Priority areas include integrated circuits, machine tools, high-end instruments, advanced materials and bio-manufacturing. Efforts will be made to advance the industrial foundation reconstruction initiative and research programs for major technical equipment.

◆ Nurturing emerging and future industries through original and disruptive sci-tech innovation, and accelerating the industrialization and commercialization of frontier technologies including quantum technology, bio-manufacturing, hydrogen and fusion energy, brain-computer interfaces, embodied intelligence and 6G.

◆ Upgrading traditional industries with advanced technologies to drive their intelligent, green and integrated growth. It also pushes forward research on seed industries and agricultural machinery and rolls out the "AI Plus" initiative.

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New Graphic



WECHAT ACCOUNT

E-PAPER



An aerial drone photo taken on Oct. 26, 2026 shows a harvester working at a rice field in Hengshan county, central China's Hunan province. (PHOTO: XINHUA)

STI Frontier

Turboshaft Engine Demonstrates Airworthiness

By LU Zijian & SUN Yu

A new tiltrotor aircraft, fitted with the latest power-enhanced engine variant of the AES100 series of engines, has successfully completed a flight test phase in Qiqihar, northeast China's Heilongjiang province.

The AES100 is China's first domestically developed advanced 1,000-kilowatt-class civil aviation turboshaft engine model. To verify its airworthiness, the research team conducted multiple highly difficult and risky airworthiness tests.

Endurance under extreme conditions

The first was a 150-hour endurance test, comprising 25 groups of six-hour cycle operation and simulating the most severe working conditions in the entire life cycle of an engine.

The most difficult part was the "three-redline" test, which required the thrust, rotor speed and gas temperature of the engine to reach their respective design limits at the same time, and each cycle had to operate stably for six hours, Yang Yan, deputy chief designer of the AES100, said.

The temperature distribution within an engine's combustion chamber is inherently non-uniform, and tests exacerbate it. It could result in localized overheating and damage the turbine blades. Therefore, mitigating such non-uniformity to the largest extent possible is the key to passing the test.

The team studied more than 100 configurations designed to ensure stable combustion. However, the shortlisted designs did not perform well when tested. The engine frequently exhibited problems such as carbon deposits on nozzle surfaces and unstable temperatures at the combustor outlet.

With time running out, the team, while continuing to optimize the initial configurations, pursued a second design approach. Over the next three years, they repeatedly modified the combustor structure and explored more advanced configurations.

In 2022, the new configuration delivered encouraging test results at a high-altitude test facility in Mianyang, Sichuan province in southwest China. In March 2023, the AES100 began a 150-hour endurance test and passed it successfully at the first attempt.

Vibration within limits

The engine containment test was the next step. In this, the engine's power transmission shaft has to be deliberately severed while the engine is running at maximum speed, causing the high-speed rotating turbine blades to fracture and fly off around the entire circumference in an instant.

The resulting destructive force is comparable to detonating multiple high-energy bombs inside the engine core.

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2026 WYSS: Youth at the Center of AI Era Science

By LONG Yun & JIANG Yun

With AI increasingly influencing the global scientific landscape, young scientists are stepping to the forefront to drive responsible innovation. Against this backdrop, the 2026 World Young Scientist Summit (WYSS) was held in Wenzhou, Zhejiang province, on October 24-25, bringing together global science talent to chart a sustainable future in the AI era.

Centered on the theme "Converging the World's Talents, Creating a Better Future" and the annual focus "Global Youth Action in the AI Era: Building a Sustainable Future," the event encouraged young scientists to pursue responsible innovation in AI, promote cross-cultural exchange and mutual learning, and engage in global science and technology governance.

Advancing global cooperation

In a first, the World Academy of Sciences (TWAS) was invited as the "guest of honor" international organization, bringing approximately 22 scientists from 15 countries to dialogue and build partnerships with young Chinese scientists. Voices from the Global South had a prominent place at the gathering with members of the Organization for Women in Science for the Developing World participating.

Marcelo Knobel, executive director of TWAS, highlighted the critical role of AI in addressing global challenges. "Responsible AI requires rigorous science, ethical judgment, and public trust," Knobel said, adding that "young scientists must have a voice in global technology governance." He also pointed out the existing disparities in scientific resources. "Access to these opportunities remains unequal," he said, noting that many talented researchers lack advanced training, computing resources, or international connections.

To address this, TWAS and the China Association for Science and Technology (CAST) signed a cooperation agreement running through 2031. It will support up to 100 research visits a year by young researchers in the TWAS network, together with workshops and joint research activities in China.

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International Cooperation

Chinese Skills Power Indonesia's Green Transition

Edited by WANG Xiaoxia

About one-hour drive southeast from Jakarta leads to the Karawang Industrial Park in Indonesia's West Java province. Through a stretch of trees, rows of gray photovoltaic (PV) panels spread across the terrain, glinting faintly in the sunlight. This is the Karawang 100 MW PV project, undertaken by PowerChina Hubei Engineering Co., Ltd. Here, sunlight is converted into electricity and transmitted to the industrial park, providing clean power to factories.

The project was connected to the grid in July 2024 and put into operation the following month. The clean electricity it supplies has cut annual carbon dioxide emissions by 19,800 tons, saving about 8,800 tons of standard coal.

The technical experience gained during construction has carried over into the daily work of local employees. "I didn't know much about this system before, but now I can operate it skillfully," said a local operator in the central control room.

Inverters, transformers, photovoltaic modules...each type of equipment has different operational requirements, which makes it necessary for technicians to continuously learn and accumulate experience. For the operator, this job not only puts his university education to use but also introduces him to new technologies.

He hopes the station's power generation will increase and Indonesia will introduce more advanced renewable energy technologies in the future.

The transfer of technology began as early as the project's construction. Yang Xiaopei, project manager of PowerChina Hubei, told reporters there were insufficient local construction resources for large-scale onshore PV projects. Previous onshore PV projects in Indonesia were generally small in scale, few local subcontractors had experience in large-scale project construction, and skilled PV mounting workers were particularly scarce.

To solve this problem, the project team arranged for Chinese technicians to train local workers, cultivating more than 300 skilled installation workers and maximum daily installation reaching 2.5 MW. From on-site demonstrations to hands-on operation, Chinese technicians integrated construction experience into practical work, enabling local workers to participate in large-scale PV project construction and ensuring the project proceeded smoothly.

Besides green electricity, project construction and operation also generate employment for local workers. *See page 3*

WEEKLY REVIEW

China Launches New Internet Satellite Group

China launched a Long March-8A carrier rocket from the Hainan commercial spacecraft launch site on October 25, sending a batch of Internet satellites into space. The Long March-8A will meet the launch requirements of constellation networks in medium and low Earth orbits.

New Irrigation to Balance Water Saving, Food Security

By integrating multi-source data and developing a new analytical framework, a study published in the journal *Nature Food* proposed that China can better balance water conservation, food security and investment returns by adopting more efficient irrigation strategies.

Mayo Clinic Discovers New Ways to Fight Aging

Seven studies from Mayo Clinic reveal new details about senescent cells, often called "zombie" cells because they stop dividing but remain active in the body. These aging cells release inflammatory substances that can contribute to diseases associated with growing older.

Cambridge Creates a 'Medical Lab on Wrist'

Cambridge University researchers have created a $10 optical sensor that can bring laboratory-level precision to wearable health monitors, potentially allowing people to track blood glucose without needles. The technology could also transform food testing, industrial quality control, and environmental monitoring.

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