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香港版
HONG KONG

CHINA DAILY

中國日報

www.chinadailyhk.com HK \$10

WEDNESDAY, April 24, 2024

Space company works on new reusable rocket

By ZHAO LEI in Wuhan
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Space Technology in Hubei province has been working on a reusable rocket that will be propelled by liquid oxygen-methane engines.

With a thrust of 70 metric tons, the new engine has undergone ignition tests as well as vertical takeoff and landing tests, according to Zhao Shuang, marketing director at the company, which is a subsidiary of China Aerospace Science and Industry Corp, a major State-owned space contractor.

Compared with traditional types of rocket engines that can function only once, engines consuming liquid oxygen and methane have become popular because they are reusable, cost-efficient and more environmentally friendly.

If everything goes according to plan, the new rocket will make its maiden flight in the near future, said Zhao, who is also deputy manager of CASIC's Kuaizhou 1A rocket team.

CASIC plans to conduct up to 10 launches with its Kuaizhou carrier rocket family this year.

"The Kuaizhou 1A and Kuaizhou 11 rockets are scheduled to carry out eight to 10 launch missions to transport more than 30 satellites to their orbits," Zhao said on Monday at a rocket assembly facility in Wuhan, Hubei province. "We have launched two Kuaizhou 1A rockets this year, and

we plan to perform several Kuaizhou 11 flights this year."

She said the Kuaizhou 1A model has undertaken 26 flights that have placed 56 satellites into space. The type made six launches last year.

The 20-meter Kuaizhou 1A model has a diameter of 1.4 meters and a liftoff weight of about 30 tons. It is capable of sending 200 kilograms of payload into a sun-synchronous orbit, or 300 kg of payload into a low-Earth orbit, according to its designers. It was first flown from the Jiuquan Satellite Launch Center in northwestern China's Gobi Desert in November 2012.

The larger Kuaizhou 11 is 25 meters tall and 2.2 meters wide. With a liftoff weight of 78 tons, the rocket is able to place a 1-ton payload into a typical sun-synchronous orbit at an altitude of 700 kilometers, or a 1.5-ton spacecraft into a low-Earth orbit.

Its first flight took place in July 2020 at the Jiuquan center but failed due to technical abnormalities. The second launch was made in December 2022 at the same site and was successful.

CASIC started developing the Kuaizhou series in 2009 as a low-cost, quick-response product for the commercial space market. The Kuaizhou is the dominant solid-propellant rocket family in China, as opposed to the Long March series which mainly relies on liquid fuel.

Launch to pave way for remote-sensing network

By ZHAO LEI in Wuhan

China Aerospace Science and Industry Corp, one of the country's major space contractors, plans to launch the first satellite of a massive remote-sensing network in the coming months, a project manager said.

Zhang Chuan, from CASIC Space Engineering Development, a CASIC subsidiary in Beijing leading the project, said the first satellite in the Chutian Remote-Sensing Satellite Network is scheduled to be put into orbit before July.

Remote-sensing satellites are tasked with observing, surveying and measuring objects on Earth, as well as monitoring weather and other atmospheric elements.

"The satellite will carry optical remote-sensing imagers, data processors, atomic oxygen sensors and other mission payloads, and will be used to demonstrate extra-low orbit remote-sensing technologies such as aerodynamic design, atom oxygen-resistance system and satellite-mounted intelligence," Zhang said at Wuhan, Hubei province, on Monday.

If the first satellite works well, we will launch nine more of the same type to the same orbit before the end of 2025 to verify networking technologies and establish a trial-run system that can respond to users' requests for data in 24 hours."

Starting in 2026, Zhang's company plans to deploy vast groups of Chutian satellites to begin the large-scale in-orbit construction of the system.

Upon its scheduled completion around 2030, the space-based network will have 300 remote-sensing satellites operating in extra-low orbits, which have altitudes of less than 300 kilometers, and will be able to obtain optical pictures, radar data, and hyperspectral and infrared images, Zhang said.

By that time, the network will be capable of mapping and surveying any given place in the world within



Our satellite network is what they really need — it will provide rapid, reliable acquisition of high-precision data and images."

Li Yanbin, CASIC employee

15 minutes after receiving users' requests, he said.

The Chutian network will be tasked with providing public services in fields such as emergency response and rescue, and disaster prevention and relief, and will also be used to carry out real-time, high-resolution observation of designated areas and specific targets in accordance with users' requests, Zhang said.

Satellites flying in extra-low orbit are closer to Earth, can produce pictures with higher definition at lower cost, and can transmit them back to Earth in less time. They also weigh less, and their production costs are lower, according to satellite designers at CASIC Space Engineering Development.

Li Yanbin, deputy general manager of the company, said that current remote-sensing products in China are far from sufficient to meet the demands from emergency response and rescue and disaster relief operations, which require timely and low-cost data support.

"Our satellite network is what they really need — it will provide rapid, reliable acquisition of high-precision data and images," he said. "Moreover, its operations will unleash the tremendous potential in businesses related to commercial remote-sensing services and may even break new ground in the space industry."