

## Paddling on

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## New pumps give 'heart' to orbiting space station

Astronauts Nie Haisheng and Liu Boming completed extravehicular activities for the second time during the construction of China's Tian-gong space station on Aug 20, when they installed extended pump sets and lifted the panoramic camera.

The newly installed pump sets will play a key role in ensuring the in-orbit operation of China's space station for no less than 15 years, the China Academy of Space Technology said.

Developed by CAST, the extended pump sets are called the "heart" of the fluid loop, a core part of the space station's thermal control system.

"Like a heart providing power for blood flow and sending blood to all parts of a body, the pump sets keep the special liquid circulating stably in the loop," said Han Haiying, a CAST designer.

Without the protection of the atmosphere, the surface temperature of the space station can reach more than 150 C in the sunlight, while in the dark its surface temperature can drop below -100 C.

In this harsh space environment, the thermal control system is crucial in ensuring the normal operation of the space station's equipment and

comfortable living conditions.

It is capable of collecting heat generated by onboard equipment and astronauts to keep them cool and carrying the heat to devices that need to stay warm, said Zheng Hongyang, a CAST engineer.

It can also help precisely control the temperatures of various "rooms" in the space station, Zheng said.

The thermal control team created multiple "hearts" for both inside and outside the cabin to give the system ultralong operational capability.

In space, astronauts wearing spacesuits are restricted in their movements, and a simple action, such as turning a screw, could cost them a lot of time and energy.

The CAST team did its best to simplify the procedure of installing the extended pump sets. The astronauts just needed to hook and lock the pump sets to the outer wall of the space station's core Tianhe module, and then connect the electric circuit as well as the liquid circuit.

The Shenzhou XII crew will continue to carry out experiments in space before their planned return to Earth in the middle of next month.

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