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DEVELOPMENT AND APPLICATIONS OF EVA SPACESUIT TESTING CHAMBER

Abstract

The Feitian EVA spacesuit has successfully protected Chinese astronauts while they were performing the first Chinese spacewalk in Shenzhou 7 mission. The validation tests of Feitian EVA spacesuit and manned training in vacuum need a simulated space environment before the real mission. For this reason, Astronaut Center of China (ACC) developed the EVA Spacesuit Testing Chamber ahead.

The chamber can simulate space environment, such as vacuum, cold-black background and thermal radiation. With the ability to provide the interfaces of oxygen, water and electric between spacecraft airlock and EVA spacesuit, the chamber integrated with some airlock equipments of spacecraft and training support facilities. It can also simulate the process of depressurization and repressurization of airlock. To ensure the safety of manned altitude tests, the chamber has self-contained safe methods, such as emergency repressurization system.

Since the chamber built, it mainly supported three types test. Firstly, pressure performance tests of EVA spacesuit, including water sublimator tests. Secondly, astronauts training and familiar with vacuum environment. Thirdly, vacuum-thermal tests of EVA spacesuit.

Applications in practice indicated that the design of the chamber is reasonable, equipments are reliable, and it fulfills the engineering requirements of EVA spacesuit tests and training.