

IAF HUMAN SPACEFLIGHT SYMPOSIUM (B3)  
Interactive Presentations - IAF HUMAN SPACEFLIGHT SYMPOSIUM (IP)

Author: Mr. zhang zhenhua  
China, zhang1983478@sina.com

RESEARCH ON THE APPLICATION AND EXPANSION OF TIANZHOU CARGO SPACECRAFT

**Abstract**

Tianzhou cargo spacecraft is an important part of China Space Station Project. It is mainly used to deliver supplies for the space station and destroy the waste from the space station in the process of reentry into the atmosphere. In 2011, cargo spaceship item was officially started. On April 20, 2017, the first cargo spaceship, named Tianzhou-1 was successfully launched by ChangZheng-7 rocket from Wenchang Space Launch Center in Hainan. On September 22, 2017, Tianzhou-1 was controlled to re-enter the atmosphere for destruction after successfully completing all on-orbit missions represented by propellant on-orbit addition. Tianzhou cargo spaceship has the characteristics of large internal space, high carrying capacity and strong expansion capacity. Besides completing the cargo replenishment task, it can also be used as a space science experiment platform to carry out space science experiments. Its pressured cabin supports astronauts working inside and can be used as an extended manned module of the space station. By improvement and the optimization of design, the capacity of the cargo ship can be further improved. Based on the existing design of Tianzhou cargo spaceship, this paper focuses on how to improve the efficiency of cargo spacecraft development, reduce costs, and enhance payload carrying and experimental support capabilities, so as to improve the comprehensive efficiency of cargo spacecraft flight mission, and ultimately provide users with more high-quality, efficient and flexible services.