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DESIGN OF GROUND SUPPORT SYSTEM FOR CHINA SPACE STATION ORBITAL FLIGHT

Abstract

In response to the long-term orbital flight of the Chinese Space Station, a complete ground support system is designed to simultaneously simulate the space station's on-orbit flight status. On the one hand, it performs ground verification for future scientific tests and maintenance tests, and on the other hand, it fails the space station Validation. The ground support system is designed in an intensive and intelligent manner. Through the reconfigurable design of hardware and software, multiple verification combinations can be flexibly combined to facilitate ground testing. It can quickly synchronize the flight data of the current on-orbit aircraft, which is convenient for the ground to carry out failure mode analysis and countermeasure verification. The system includes energy and measurement and control support subsystem, multi-sensor data acquisition subsystem, simulation subsystem, centralized flight control subsystem, data synchronization and interpretation subsystem. Synchronous design and test verification during the development of the China Space Station have significant application value for the development of large space rendezvous and docking spacecraft and the verification of combined operation technology. It can also be used for rapid verification of low-cost commercial aircraft.