

SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)  
Interactive Presentations (IP)

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REQUIREMENT ANALYSIS OF SPACE TRANSPORTING SYSTEM SERVED FOR APPLICATION  
MISSION OF THE SPACE STATION**Abstract**

Space Station is the base for scientific research with human directly involved in low Earth orbit. Two primary functions of space station were concluded: the national lab for scientific experiments, and the platform for technological development. Several space stations had launched since 1986, and only the International Space Station are still on orbit currently. Throughout the decades of development history, the key research on the large-scale space station was validating the platform performance at first, and the application task has been changed to be the main study recently. Such characteristics of experiments developed on space station during operation phase were investigated in this study. The International Space Station, as a typical case for space station, was investigated to find some law for the initial stage for operation, and it was found that the space transporting system played an important role in keeping on-orbit experiments and investigations in order, especially for the reentry transporting system. The International Space Station once faced the shortage of the reentry capability, which had caused belt-tightening in the application task, and upmass and downmass of Expedition 37/38 could describe the circumstances. Considering the transporting capability of the International Space Station, comparison analysis of transporting system and cost-effectiveness was investigated and given in this paper. Requirements of space transporting system were analyzed in this paper. As the space station could last several decades on orbit, and the construction process was a huge cost as well, how to keep the research work of space station orderly and make full use of it were the priority among priorities, while the space transporting system was considered as a prerequisite. The reentry space transporting system was emphasized as a key element among the space transporting system of the mission equipments, and perspectives of future reentry space transporting system, which may provide references for China's Space Station Program.