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A CONCEPTUAL DESIGN OF ON-ORBIT SERVICING IN GEO

Abstract

OOS(On-Orbit Servicing) is aimed to improve capability of spacecrafts through a series of on-orbit operations. Orbital Express program demonstrated the feasibility of refueling and function module replacement. There are many valuable satellites in GEO and they are well distributed over given areas. Therefore, it could save costs to use low cost servicing spacecrafts for refueling and function module replacement of target spacecrafts in GEO. A conceptual design of servicing spacecrafts is proposed in this paper. With refueling devices and multi-DOF small robot, the vehicle could perform refueling and replacement when docking the target spacecrafts as a rigid body. Then, system architecture is outlined based on the design.