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Space Debris Removal Concepts (6)

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RECENT OHB SYSTEM SPACE ROBOTICS ACTIVITIES FOR ADR AND OOS

Abstract

Targeting the very promising future of Active Debris Removal (ADR) and On-Orbit Servicing (OOS), OHB System is currently undertaking a range of activities to master the technical hurdles involved.

OHB System has long been active in these fields through several national, international and commercial activities focusing on both technologies and missions. As for technologies, OHB System was involved in the ROKVISS mission to qualify robotic arm joints onboard the ISS. Also, vision-based navigation has been developed and tested in the VIBANASS project and OHB System has been responsible for the full robotic payload of the commercial SMART-OLEV. In the DEOS Phase B1, OHB System was responsible for the study lead and for the rendezvous docking payload. In phase B2 then, the company developed the target spacecraft and the docking mechanism. Other cases of mission responsibility include ESA's study of a service-oriented approach to ADR (ADRS), investigating both mission concepts and business models, and the recent e.deorbit phase A. Also a tentacle-based clamping mechanism was investigated in a dedicated study.

Currently the main ongoing activity in the field of mission design is the OHB-led e.deorbit phase B1, where a chaser is being developed to remove ESA's ENVISAT from sun-synchronous orbit. Besides spacecraft design this study focuses on the whole range of challenges including GNC, mechanisms, and mission control. To supplement these activities, an additional mission study for commercial applications of ADR and OOS technologies has recently been performed with internal funding. More targeting the field of servicing, refueling technologies are being studied in the ASSIST project where currently a breadboard of the refueling adapter is being tested.

This paper gives a summary of OHB System's current activities for active debris removal and on-orbit servicing, including all related mission and technology development projects.

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