SPACE DEBRIS SYMPOSIUM (A6)
Space Debris Removal Concepts (6)

Author: Mr. Marc Scheper
OHB System AG-Bremen, Germany

FROM P2ROTECT TO E.DEORBIT – ACTIVE DEBRIS REMOVAL AT OHB SYSTEM

Abstract

Space-debris around Earth is becoming a more and more significant threat to the proper functioning of our satellites in orbit. Besides the protection of spacecrafts against smaller debris by various means like shielding, optimized accommodation or spacecraft orientation, the active removal of large debris seems to become mandatory for the near future. To cope with this increasing problem, different strategies to enhance mission protection have been investigated during the past years by OHB System, starting with "P2ROTECT" (Prediction, Protection Reduction of Orbital Exposure Collision Threats), an activity within EC's 7th Framework Programme. One outcome of this collaborative activity was the need to start removing at least five larger objects per year from LEO to stabilize the debris population there. After its failure in April 2012, the ESA-owned ENVISAT is the target of the highest interest to ESA to be removed from its orbit due to its high mass of approximately eight tons and its orbit (800km/98) in one of the most densely populated regions with a high orbital lifetime. The de-orbiting of the non-operational ENVISAT is investigated within the ESA-funded phase A system study called "e.Deorbit". In parallel the "assessment and simulation of a tentacles based capture mechanism for ADR" is performed as this is one promising option for the capture of a non-cooperative satellite like ENVISAT and besides this also a "service oriented approach to the procurement/development of an active debris removal mission" was investigated, both under ESA contracts. The paper will show the evolution of the related activities from the basic and more general research performed within P2ROTECT to the most current activities dedicated to the de-orbiting of ENVISAT triggered by its failure in April 2012.