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INTEGRATION OF THE LARGE ENVELOPE ADVANCED PARACHUTE SYSTEM IN STRATOS IV

Abstract

Delft Aerospace Rocket Engineering, DARE, is a society with the goal of reaching space with a student-built sounding rocket. The latest iteration, Stratos IV, is designed with this goal in mind. To prove Stratos reached space, the flight data needs to be safely recovered and retrieved. The Parachute Research Group of DARE developed the Large Envelope Advanced Parachute System (LEAPS) for this task. To fit the Stratos IV mission several modifications have been made to the system. The drogue parachute is deployed using a hot gas deployment system to save mass and volume and to increase reliability. The main parachute has been changed to a Disk Gap Band parachute as this is better testable in the Open Jet Facility, a subsonic wind tunnel of Delft University of Technology. To protect the parachute system during the atmospheric re-entry, a heat shield is included.

The Stratos recovery team has worked together with other projects within PRG such as the simulations department and the team working on the Supersonic Parachute Experiment Aboard REXUS (SPEAR). Using the combined knowledge PRG is capable of creating a reliable, supersonic capable parachute recovery system for the safe recovery of the Stratos IV flight data located in the rocket's nose cone.