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FLYMATE: THE NEXT GENERATION OF PICO SATELLITES DEPLOYERS

Abstract

The CubeSat standard made space technology and experiments more accessible to students, universities and research institutions around the world. It is now becoming a field of enhanced innovation and breakthrough technologies demonstration. High-efficiency solar cells, innovative de-orbitation devices as well as new distributed mission concepts are developed, launched and proven in Space to a large extent due to the cost-effective nature of the CubeSat standard. The FlyMate project contributes to this trend in the domain of Picosatellite Orbital Deployers. The existing PODs (P-POD, X-POD, ISIS-POD) are all based on the same concept of spring-loaded ejection mechanism. Their 3 CubeSat passengers are compacted in the deployer's body and ejected "all-at-once" into orbit. These mechanisms have 4 major drawbacks: RF interferences between closely ejected CubeSats, no space between passengers for external devices, power supply required from launch vehicle, and more importantly no possibility for distributed Cubesat missions. FlyMate paves the way for the Next Generation of Picosatellite Deployers through the use of a high-precision motorized ejection system. As a result FlyMate's passengers are ejected individually at adjustable speeds and distances. Apart from offering a dedicated service to individual passengers, the unique features of the FlyMate make our system the only one ready for the up-coming distributed and formation flying demonstration missions. FlyMate has been developed by 3 young engineers at INSA de Lyon with the support of the French Space Agency (CNES) and local SMEs. Ground qualification tests have been carried out successfully and the 1st In Orbit Demonstration mission has been negotiated with a launch operator for late 2009.