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## FLYMATE: ADVANCED NANOSATELLITE DEPLOYER

**Abstract**

Since the introduction of the CubeSat standard in 2000 space technology and experiments have become more accessible for students, universities and research institutions around the world. Now it becomes a field of enhanced innovation and breakthrough technologies demonstration: deployable solar panels, new deorbitation concept devices, as well as distributed and swarm space missions can be developed, launched and proven in the space to a large extent due to the cost-effective nature of CubeSat standard. The FlyMate contributes to this innovation trend in the domain of Launch Adapter mechanisms. FlyMate mechanism is based on high-precision motorized ejection system. It can contain up to three 1U passengers, which are spaced out in the structure body at intervals of up to 6cm through the use of a patented system of ropes, holding elements and rails. This protects the satellites during the LV lift-off and during the main passenger separation. Furthermore, the CubeSats are ejected individually at adjustable speeds and distances. The ejection speed can vary between 1 and 2 m/s, whereas the intervals between the ejections can range from few seconds to several hours. This renders FlyMate the unique system to satisfy efficiently the requirements of prospective formation flying and constellation nanosatellite missions. In the course of 2009-10, the system has completed a series of qualification tests: Vibration-Shock, Thermal-Vacuum and ZeroG. Moreover, 1600 functional ejection tests have been carried out in NovaNano facilities in order to insure the system reliability. The paper gives also an outline about the latest FlyMate<sup>TM</sup> model - a Proto Flight Model manufactured for a 3U CubeSat satellite, and delivered to an Early Adopter client.