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Author: Mr. Toshiyuki Ise
IHI Aerospace Co, Ltd., Japan

Mr. Tomoya Fujimoto
IHI Aerospace Co, Ltd., Japan
Mr. Tsuyoshi Hoshino
IHI Aerospace Co, Ltd., Japan
Mr. Mitsuya Sakamoto
IHI Aerospace Co, Ltd., Japan
Mr. Takayuki Imoto
Japan Aerospace Exploration Agency (JAXA), Japan
Mr. Kazuhiro Yagi
IHI Aerospace Co, Ltd., Japan

THE FIRST RIDE-SHARE MISSION FOR EPSILON LAUNCH VEHICLE AND ITS FUTURE PLANS

Abstract

On January 18th, 2019, the first rideshare launch for the Epsilon Launch Vehicle was successfully conducted as its fourth flight. It carried seven satellites selected by JAXA's "Innovative Satellite Technology Demonstration Program", which aimed to provide launch opportunity for startups, universities, etc., to encourage Japanese space industry.

The Epsilon is one of the Japanese flagship rockets developed by IHI AEROSPACE Co., Ltd. under the supervision of JAXA. It consists of three solid stages and an optional liquid stage, and is capable of deploying payloads up to 600kg into SSO (500km). Through the past three missions, Epsilon has demonstrated its capability of injecting single payload into three types of orbits, Low Earth Orbit (LEO), Highly Elliptic Orbit (HEO) and Sun Synchronous Orbit (SSO). The Epsilon's payload-friendly environment, such as sinusoidal vibration and acoustic environment, was also confirmed during the flight.

Towards the fourth mission, a new multi-satellite deployment system was developed in order to install three different sizes of satellites (one 200kg class small satellite, three 50kg class microsatellites, and three CubeSats). In addition to the payload attachment fitting with a diameter of 937mm which had been used in the past three missions, a standard separation system "Lightband" made by Planetary Systems Corporation and "E-SSOD", developed by utilizing the heritage of the "J-SSOD" CubeSat deployer installed in the ISS Japanese Experiment Module "Kibo", were newly added to the lineup for microsatellites and CubeSats separation system respectively.

Next multi-satellites launch mission is planned in 2020 under JAXA's same program and we will continue to improve our ride-share system to meet various customer needs.

In the paper, we introduce our newly developed ride-share system carried out in the fourth flight. Further, we illustrate Epsilon's future plans for further flexible launch service.