

IAF SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)
Future Space Transportation Systems (4)

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DEVELOPMENT STATUS OF JAPANESE REUSABLE EXPERIMENTAL VEHICLE RV-X

Abstract

Mitsubishi Heavy Industries, Ltd. (MHI) has played a major role in Japanese liquid fuelled launch vehicle HII-A/H-IIB development, manufacturing and launch service. H-IIA/H-IIB's latest success rate has reached 97.9 percent demonstrating high reliability. Japan Aerospace Exploration Agency (JAXA) and MHI are currently developing a new expendable H3 launcher with first flight planned in FY2020.

Paralleling with H3 development, research and development of reusable space transportation system aiming for drastic reduction of space transportation cost is on-going. Notably, JAXA and MHI has developed and demonstrated reusable 40 kN thrust liquid hydrogen/oxygen engine with successful firing worth 100 mission duration cycle in 2014. As a next step, JAXA and MHI have been developing "RV-X" (Reusable Vehicle – eXperiment) since 2016. MHI particularly contributes in development of Reusable Engine and Guidance Navigation and Control (GNC) technology. First firing test of RV-X is successfully completed at JAXA Noshiro rocket testing centre in October 2018, and second firing test and flight test is planned in JFY2019.

This paper reports the development status of RV-X and MHI's strategy of transport cost reduction by reusable technology.