

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

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DEVELOPMENT PLAN AND DEMONSTRATION OF JAPANESE REUSABLE LAUNCH VEHICLE

Abstract

Mitsubishi Heavy Industries, LTD. (MHI) has been contributed to the development and manufacture of liquid fuelled launch vehicles from early phase in Japan. MHI began providing launch services with H-IIA launch vehicle for both commercial and government missions in 2007. In 2013 the H-IIB was added in the line-up of service launcher family. The latest success rate of H-IIA/B has reached to 97 percent. In addition, a new expendable launcher H3 is under development and its first flight is planned in FY2020.

In parallel, aiming for the drastic reduction of space transportation cost, RD for the reusable space transportation systems are in progress. Especially, reusable 40 kN thrust liquid hydrogen/oxygen engine has been developed and demonstrated successful firing worth 100 flights duration in 2014 by JAXA and MHI. For next step, we have agreed to collaboratively develop a reusable experimental vehicle which will be equipped with the reusable engine. The objective of this vehicle is to raise TRL of several key technologies required for reusable space transportation systems as system demonstration. Additionally, JAXA and MHI continue a conceptual study of space transportation system, in order to market the reusable system in the 2020s with reduced cost of space transportation.

This paper reports the development status of experimental vehicle and system study of future Japanese space transportation system.