

SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)
Launch Vehicles in Service or in Development (1)

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OVERVIEW OF THE H-IIA UPGRADE PROJECT

Abstract

The H-IIA launch vehicle is the workhorse that has provided Japan with reliable, independent and guaranteed access to space since 2001. As the first step toward the National Flagship Launch System in the next generation, the H-IIA upgrade project aims at improving the vehicle's geostationary transfer orbit (GTO) mission capabilities and payload environment conditions. This will enable Japan to promote RD and utilization of space, as well as to enhance the international competitiveness of the H-IIA launch vehicle. The H-IIA upgrade project focuses on upper stage modifications to provide better services for customers as below:

1) Long-coasting capability The coasting duration of the H-IIA upper stage will be enhanced from one hour to five hours by improving cross-cutting cryogenic propulsion technologies. This will enable to inject a spacecraft closer to geostationary orbit (GSO) than our current standard transfer orbit to extend the fuel life of satellites by reducing the delta-V to a geostationary orbit (GSO), while also extending limited launch windows for planetary exploration missions.

2) Improved payload environment The payload shock environment will be reduced from 4,100G to below 1,000G by a non-explosive clamp-band separation system. This allows sensitive equipments to be located closer to separation plane and problems with current pyrotechnic release devices will be mitigated.

3) Onboard Tracking System for Range Safety An onboard navigation sensor for range safety will be demonstrated that provides navigation data for range safety without tracking radar stations. This concept is intended to minimize the ground infrastructure and reduce cost of operation and maintenance.

The development will be completed by 2013 to bring the vehicle to market as quickly as possible.

This paper presents an overview of the H-IIA upgrade project and its development status.