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IAF SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)
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Author: Mr. Yorichika Mihara
Mitsubishi Heavy Industries, Ltd., Japan

Mr. Joseph Moran
Switzerland
Mr. Dominique Segond
Switzerland
Mr. Isao Fujikake
Mitsubishi Heavy Industries, Ltd., Japan

H3 UPGRADE CONCEPT WITH ENHANCED UPPER COMPARTMENT

Abstract

H3, the next Japanese flagship launch vehicle is now midway through the development phase with the maiden flight in 2020, early 2021. The H3 concept will provide easy and frequent access to space for not only Japanese government and scientists, but for customers worldwide as well. In order to respond to the rapidly evolving changes and increasing demand for satellite launch services, H3 needs to continue to evolve, providing: - a higher payload carrying capability - a quicker more flexible response to satellite operator needs and customizations - an affordable service in a way that is sustainable under mutual collaboration scheme between perspective space industry customers worldwide To answer the aforementioned needs, one of the foreseen H3 upgrade considers integrating the so called Enhanced Upper Compartment (EUC) concept provided by RUAG Space. The EUC is based on the idea to mechanically couple the Satellite Dispenser or other Payloads to the Payload Fairing (PLF) with a bulkhead or similarly supporting structure. This coupled configuration affords the following enhancements to the Launcher: - improved launch environment for multi-/constellation configured satellite - maximises utilisation of the permissible Payload volume inside the PLF as there is no clearance issue between the Payloads and the PLF as they move in unison - greatly increased payload mass with only a modest increase in dispenser mass as the stiffness of the dispenser / PLF ensemble offloads the dispenser The introduction of this H3 upgrade concept with EUC and the results of a system architectural study are reported in this paper.