

MATERIALS AND STRUCTURES SYMPOSIUM (C2)
Interactive Presentations (IP)

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FLIGHT RESULTS OF STRUCTURE SUBSYSTEM FOR ENHANCED EPSILON LAUNCH VEHICLE

Abstract

The Enhanced Epsilon launch vehicle, latest version of Japan's solid propulsion rocket, made its maiden flight in December of 2016 carrying a explorer satellite of energization and radiation in geospace. The features of the Enhanced Epsilon are increase of launch capacity and enlargement of payload usable volume. In order to realize these improvements, powerful second stage motor (M35 motor) is newly developed and exposed from nose fairing. Consequently the structure subsystem for the Enhanced Epsilon is almost newly developed except for the nose fairing and the first stage motor. For example, 1st and 2nd interstage joint is changed drastically from the semi-monocoque structure made of aluminium alloy to the CFRP skin aluminium honeycomb sandwich with CFRP flange to get the lower cost and lighter structure mass. Also, low shock payload attach fitting using a non-pyrotechnic device is applied in accordance with the user friendly concept of Enhanced Epsilon. This paper describes the detail of development and flight results of structure subsystem for Enhanced Epsilon launch vehicle.