

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

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## APPLICATION OF LNG PROPULSION SYSTEM TO EPSILON UPPER STAGE

**Abstract**

JAXA and IA (IHI Aerospace) have researched and developed LNG (liquefied natural gas) propulsion system for practical use. The 30kN-class LNG engine has been developed since 2010 on the basis of the experience of the 100kN-class LNG propulsion system for GX launch vehicle and high pressure combustion and high characteristics exhaust velocity efficiency was demonstrated in 2012. This paper describes the result of the investigation that LNG propulsion system was applied to EPSILON upper stage as one of the future concept of EPSILON. We designed the feasible LNG stage with high performance 50kN-class engine and the experience of the 100kN-class LNG propulsion system development. Applying of the LNG stage to EPSILON is expected to improve their performance. We aim at the early flight demonstration of LNG propulsion system and continue to investigate to apply LNG propulsion system to the various spacecrafts for the future.