IAF SPACE PROPULSION SYMPOSIUM (C4)
Propulsion System (1) (1)

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RESULT OF PRELIMINARY DESIGN AND DEVELOPMENT STATUS OF LE-9 ENGINE

Abstract

Japanese new booster engine LE-9 has been under development since 2015 as one of the key components of the H3 Launch Vehicle. The expander bleed cycle is adopted as its engine cycle to embody three key concepts of H3: reliability, affordability, and high performance. This engine cycle has fewer components than other cycles like the gas generator cycle and the staged combustion cycle. In addition to simplifying engine cycle, electro-mechanically actuated (EMA) valves have removed pneumatic lines, contributing to the reduction of the components. In addition, several new manufacturing technologies are also being developed to realize lower engine cost. To confirm the performance of the LE-9 engine and the feasibility of new technologies, full-scale firing test including turbopumps tests have been conducted in JAXA's facilities since the beginning of 2017. In this paper, the results of pleliminary design of engine components, the latest status of hot-firing tests, and the future plan are summarized and discussed.