

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

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KEYNOTE: PROMETHEUS: PRECURSOR OF LOW-COST ROCKET ENGINE

Abstract

Prometheus is the Precursor of a new liquid rocket Engine family designed for low-cost, flexibility and reusability.

This project initiated through cooperation between CNES and Ariane Group, entered in the ESA Future Launchers Preparatory Programme after the ESA Ministerial Conference in December 2016.

The aim of Prometheus project is to design, produce, and test an advanced low-cost 100-tons class LOX/LCH₄ reusable Engine. This Engine, designed for 1M recurrent cost, targets also flexibility in operation through variable thrust, multiple ignitions, compatibility to main and upper stage operation, and minimized ground operations before and after flight. The major levers to reach those challenging target, are cost-killing approach for system and components design together with extensive recourse to Additive Manufacturing for low-cost production. In addition the introduction of full electric control and command with Health and Usage Monitoring capabilities gives to the engine the targeted flexible operability.

To get maximum profit in product innovation and value creation, Prometheus programme promotes the application of agile and frugal methodologies.

This paper presents the global status of Prometheus development. Moreover it gives a global picture on the main achievements relative to advanced additive processes for low-cost production.

Prometheus is part of the effort to prepare long terms Ariane 6 evolution.