

SPACE PROPULSION SYMPOSIUM (C4)
Propulsion System (2) (2)

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A6 SRM UPDATED STATUS ON DEMONSTRATIONS ACTIVITIES

Abstract

While Ariane 5 ME and its upgrades will provide independent access to space for Europe in the heavy-payload class for the next years, a preparatory work has begun on a new European launcher, Ariane 6, to be operational in 2021. Only the preliminary development period covering 2013-2014 activities was decided at the last ESA ministerial council in Naples. Its objectives are to achieve the B1 development phase with the completion of a SRR where an industrial commitment is expected in order to decide Ariane 6 full development up to qualification completion.

The chosen configuration is based on a first stage with three SRM, a second stage with one, identical SRM, and a third stage with the cryogenic Vinci engine. The single SRM has a propellant mass in the range of 145 tons. Using this configuration allows to reach the 6.5 t GTO. Technology maturation activities focused on P145 SRM are also ongoing, with the strong objective to be compliant with the Technology Readiness Level required to enhance the choice criteria on the technologies that could be implemented during the next development phases. These technology maturation programs are managed by ESA and coordinated with initiatives at national levels.

The demonstration activities managed by HERAKLES under ESA frame contract are particularly focused on: - Large size grain continuous mixing process in order to have an alternative process to the current batch approach with large mixers and contribute to recurring cost reduction; - Pressure oscillation issues in large monolithic motor, mainly linked to thermo-acoustic instability, covering the range of envisaged motor.

This paper presents the status and perspectives of the activities on this two “demonstrators”.