

SPACE PROPULSION SYMPOSIUM (C4)
Propulsion concepts and studies (9)

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ARIANE 5 MPS ARTA 5 FIRING TEST

Abstract

The ARIANE 5 launcher is boosted by a pair of large Solid Rocket Motor with a diameter of 3 meters and an overall motor length of 27 m. The 480 tons (2x 240) of solid propellant speed up the 200 tons of the Ariane 5 central core at more than Mach 6 in approximately two minutes. Such a performance is obtained with a high level of reliability, demonstrated on Ariane 5 by more than 120 successful flying motors without major issues, and moderate costs compared to alternate propulsion mode.

In order to follow on the production program and the operational flight phase, an Accompanying Research and Technology Ariane program (ARTA) is funded and managed by ESA-APT and implemented by Europropulsion at motor level and its sub-contractors at components level.

Periodic ground firing tests are included in this program with three main objectives: detect potential hardware production or motor performances drifts, qualify new raw materials due to obsolescence, qualify design changes for flight anomalies treatment.

These ground firing tests are also used to validate some design evolution as passenger test in order to improve motor behavior and contribute to recurring cost reduction.

This paper will first summarize the already performed four ARTA ground firing tests emphasizing the benefits and lessons learned for the production program and then will describe more in details the objectives and results of last ARTA 5 firing test performed on May 2012. Some identified needs and foreseen proposals for the coming firing tests up to the end of the decade will be also presented.