Paper ID: 67123
oral

IAF SPACE PROPULSION SYMPOSIUM (C4)
Solid and Hybrid Propulsion (1) (3)

Author: Mr. Yann Talamoni
ArianeGroup, France

KEYNOTE: P120C SOLID ROCKET MOTOR NOZZLE DEVELOPMENT

Abstract

The P120C Solid Rocket Motor project was kicked-off during the Ministerial Council in November 2014. It aims at providing the next generation of European Expandable Launchers, namely Ariane 6 and VEGA-C, with a new low cost generation of SRM. Very ambitious recurring cost objectives are targeted for Ariane 6 and Vega C to properly answer to the market needs. Thanks to the previous P80 demonstration program which allowed maturating and qualifying cost efficient technologies, processes and materials, the P120C nozzle design features another step of design and manufacturing simplifications associated to more efficient ways of production.

After five years of steady and intensive activities, this paper presents

- The main outcomes of the qualification phase mainly based on three static firing tests performed at the BEAP (Banc d'Essais Accélérateurs Poudre) vertical bench test in French Guiana operated by CNES French Agency;
- An overview of the design finally selected by ArianeGroup for the P120C nozzle, the material, processes and new lean production lines mandatory to cope with the ambitious cost objectives required;
- The global status of the SRM development and qualification, on the way to the first Ariane 6 maiden flight.

As a matter of perspectives on the Nozzle component, some incremental adaptations are already under analysis and a complementary overview will be presented concerning:

- The possibility to increase the performance of the SRM, by rising the propellant mass and consequently the thermal charges on the Nozzle component
- The willingness to test and qualify other technologies and architecture, in order to reduce further the cost and increase the competitiveness at Launcher level