

IAF SPACE PROPULSION SYMPOSIUM (C4)
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ARIANE 6 AND VEGA-C PROGRAMS: THE P120C SRM NOZZLE QUALIFICATION

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 maturing 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 will present the main outcomes of the qualification phase mainly based on two static firing tests performed at the BEAP 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 second challenge to meet will be to produce a maximum rate of 31 nozzles per year from year 2023, which has never been done in Europe before in this field of space activity. An overview of the Nozzle industrial means specifically implemented in ArianeGroup Le Haillan plant will be presented. These activities will pave the way of the manufacturing of the first operational nozzle items for the maiden flight of VEGA-C fall 2019 and Ariane 6 mid 2020.