Paper ID: 39578
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SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)
Launch Vehicles in Service or in Development (1)

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THE VEGA DEVELOPMENT AND EVOLUTION PROGRAMME

Abstract

Following the approval of European Ministers in December 2016 at the occasion of the ESA Council meeting at Ministerial level held in Switzerland, the VEGA Launch System development programme has received an impulse for the consolidation of the short term strategy as well as its future evolutions. In particular, in addition to the objectives set in 2014 at the start of the VEGA-C development, the VEGA-C main requirements have been redefined with an increase of payload capability, in mass and volume, towards 2 Tons class satellites in Low Earth Orbit for typical Earth observation applications. Taking into account these new requirements the VEGA-C Launch System architecture has been revisited with main modifications on the 1st stage P120C Solid Rocket Motor, the introduction of a larger fairing and newly upgraded avionic equipment, targeting a maiden flight by mid-2019.

In addition to the main development of VEGA-C, ESA has been tasked to prepare the future evolution of VEGA and relevant services on the basis of 4 main drivers:

1) Study of a family of launchers based on building blocks using either available or under development products (P120, P80, Z40, Z23, Z9, AVUM, VUS) able to cover a wide range of payloads (from mini-sat up to 2.5 Tons in LEO) with focus on cost reduction through the introduction of Lox-Methane propulsion for Upper Stages and Hydrogen Peroxide for Reaction Control Systems.

2) Introduce a VEGA Small Satellite Mission Service based on tailored modular payload dispenser and ground processes to offer a standard launch service for small satellites.

3) Study the possibility to increase the VEGA market capture for missions above LEO, complementary to Ariane 6, with the development of a transfer stage, VENUS, using an electric propulsion module.

4) Develop an integrated system based on VEGA-C and a reusable re-entry vehicle, Space Rider, capitalizing the ESA IXV heritage, for in-orbit experimentation and validation of payloads requiring re-entry from space.

The IAC paper and presentation will provide an up-to-date insight of the overall VEGA-C Launch System development status as well as an overview of the main activities on the VEGA Evolution and relevant additional services.