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THE VEGA SPACE TRANSPORTATION SYSTEM DEVELOPMENT: STATUS AND PERSPECTIVES

Abstract

Since its Maiden Flight in 2012, Vega has successfully placed more than 20 satellites into different LEO, ranging from polar to equatorial, from orbital to sub-orbital, from single payload to multi-payloads. Thanks to its reliability and versatility, Vega is considered the reference European launch system for LEO satellites in the mass range of 1 to 1500 kg and above.

Building on Vega successes, in December 2014 the new "Vega C" launch system development was approved by European Ministers, with the objective to develop a "consolidated" version with a configuration providing an increased payload capability of about 2300 kg, with an enlarged payload fairing to capture typical Earth observation missions, among other types of applications.

In addition to the new Vega C launch system, the development of a series of spin-offs products was initiated by the programme with the objective to widen the Vega market capture, namely: o The Small Spacecraft Mission Service (SSMS) for smaller payloads, benefiting from the higher Vega C performance and the growing market of small satellites developed by universities and research organizations, offering low cost ride-share opportunities for launch services into LEO; o The Space Rider for payloads requiring return to Earth, providing a reusable orbital customisable/standardised laboratory for multiple space applications (e.g. microgravity, IOD/V for Earth observation, science, robotic exploration, telecommunications), able to perform in-orbit payloads operations, de-orbit, re-enter, land on ground, be relaunched after limited refurbishment, enabling routine "access to", "operation in" and "return from" space; o The VEnUS for payloads requiring orbit-to-orbit transfer, extending Vega application basis for satellites up to 1 ton to Medium Earth Orbits for constellation replacement, Highly Elliptic Earth Orbits for science/exploration applications, GEO complementary to the GTO by orbit raising; o The Vega Evolution preparation to increase further Vega competitiveness for the future, achieving Vega C performance at reduced recurring costs, thanks to the introduction of new technologies in the area of propulsion with lox-methane for the upper stage and hydrogen peroxide for roll and attitude control, in the area of avionics to increase mission flexibility, as well as in several other areas.

It is also thanks to these new developments that the Vega services will expand the market reach, possibly increasing its yearly launch rate up to 4, 5 and beyond.

The paper and presentation will provide an up-to-date insight of the overall VEGA development programme objectives, status and planning.