

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

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THE VEGA DEVELOPMENT PROGRAMME

**Abstract**

The new VEGA-C Launch System development was approved by the European Ministers on December the 2nd 2014 at the occasion of the ESA Council meeting at Ministerial level held in Luxembourg, with the following key objectives: to qualify in flight a consolidated version of the VEGA Launch System by 2018, to better respond to market conditions. In particular by: o implementing economically sound cost reduction driven modifications in the operational launcher; o enlarging the potential market by providing cost efficient launch service solutions; o demonstrating in-flight, on an operational launcher, an increase of performance ( $> 300$  kg) with respect to the qualified VEGA launcher performance in the reference 700 km circular Polar Orbit, i.e. 1800 kg, without increase in exploitation costs; to reduce the dependency of the operational VEGA Launcher System on non-European sources by introducing European equipment and components, without increase in exploitation costs; to consolidate the technical and programmatic elements for the long-term evolutions of the VEGA launch vehicle addressing a larger European institutional customer base.

The VEGA-C Launch System development activities encompass both the Launcher System and the Launch Base. More specifically: The Launcher System consists of: o Launch Vehicle a 1st stage motor, the P120C SRM and related TVC common with ARIANE-6 for both A6-2 and A6-4 versions; a 2nd stage motor, the Zefiro 40 SRM and related TVC, with the SRM derived from the AVIO demonstrator; a 3rd stage motor, the Zefiro 9 SRM common with the VEGA currently in operation; a 4th stage, the AVUM+ LPS loaded with 30% more propellant, featuring several new component procured in Europe; o All facilities in Europe and in French Guiana to build up Launcher elements until their final integration in the frame of the launch campaign. The Launch Base consists of: o Launch Complex the Ground Proximity Means (LC-GPM), including the elements directly interfacing with the Launch Vehicle; the Ground Support Means (LC-GSM), including the elements not directly interfacing with the Launch Vehicle; o Launch Range: Vega/Vega-C Launch Range facilities and means, though not formally part of the Launch System.

The IAC paper and presentation will provide an up-to-date insight of the overall VEGA-C Launch System development approach, status and planning.