



# THE WORLD'S SPACEPORT

## Ideal location

The Guiana Space Center (CSG) offers ideal conditions for launching any payload to any orbit at any time. Located at 5 degrees North latitude, its proximity to the equator provides an extra boost of energy due to the Earth's rotation – a slingshot effect that is greater here than at most other launch sites.

## State-of-the-art facilities

The CSG provides modern Payload Preparation Facilities that are recognized for their high quality in the space industry. The facilities are capable of processing several spacecrafts from different customers simultaneously, thanks to vast clean-rooms and commodious infrastructure. Designed to support the rockets' multiple launch capability and high launch tempo, the preparation facilities meet the needs of customers using any of the three vehicles in the Arianespace family and its two next generation launch vehicles.

## A new launching complex

The Ariane 6 launch site (ELA-4) is a dedicated area designed for launch vehicle final preparation, the upper composite integration with launch vehicle and the final launch activities. It includes the launch pad (ZL4), the launch vehicle assembly and integration building (BAL) and support buildings. The Ariane 6 launch site is located approximately 10km to the North-Ouest of the CSG Technical Center.

## Strict security

The French government, the CSG, and Arianespace follow strict security measures that meet the most rigorous international and national agreements and requirements.

Arianespace activities are characterized as highly security sensitive ones by the French government and consequently very strict and rigorous measures are implemented with the support of national authorities to satisfy both national and international requirements. They apply to the three launch systems: Ariane 5, Soyuz, and Vega, and strictly limit access to spacecraft.

Specifically, the security regime is compliant with requirements governing the export of U.S. manufactured satellites or parts under the ITAR regulation.

## Safety mission

The CSG entities apply rigorous Safety Rules during each launch campaign: this includes authorization of equipment use, operator certification, and permanent operation monitoring. Any potentially dangerous activity is to be reported to the CSG responsible, which in turn, makes certain that safety equipment and emergency response teams are poised to deal with any hazard.

## Environmental protection

For many years, all CSG actors have been committed to protecting the environment, through strict measures during spacecraft preparation, launch, and flight. The impact of the launch vehicle in flight on the environment and the careful disposal of hazardous waste are thoroughly monitored.

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TECHNICAL OVERVIEW

VEGA



# VEGA

Offering a payload capacity of 1.5 metric tons into low Earth orbit (LEO), Vega was purpose-designed for the launch of small scientific or Earth observation satellites.

It can carry out a wide range of missions, and its restartable upper stage gives it extensive operational flexibility. As the only launcher in this class now in regular production, Vega has become a global benchmark in its class.

Operated in concert with Ariane 5 and Soyuz, Vega is launched from its own dedicated launch pad (SLV) at the Guiana Space Center, where it can take advantage of state-of-the-art facilities.

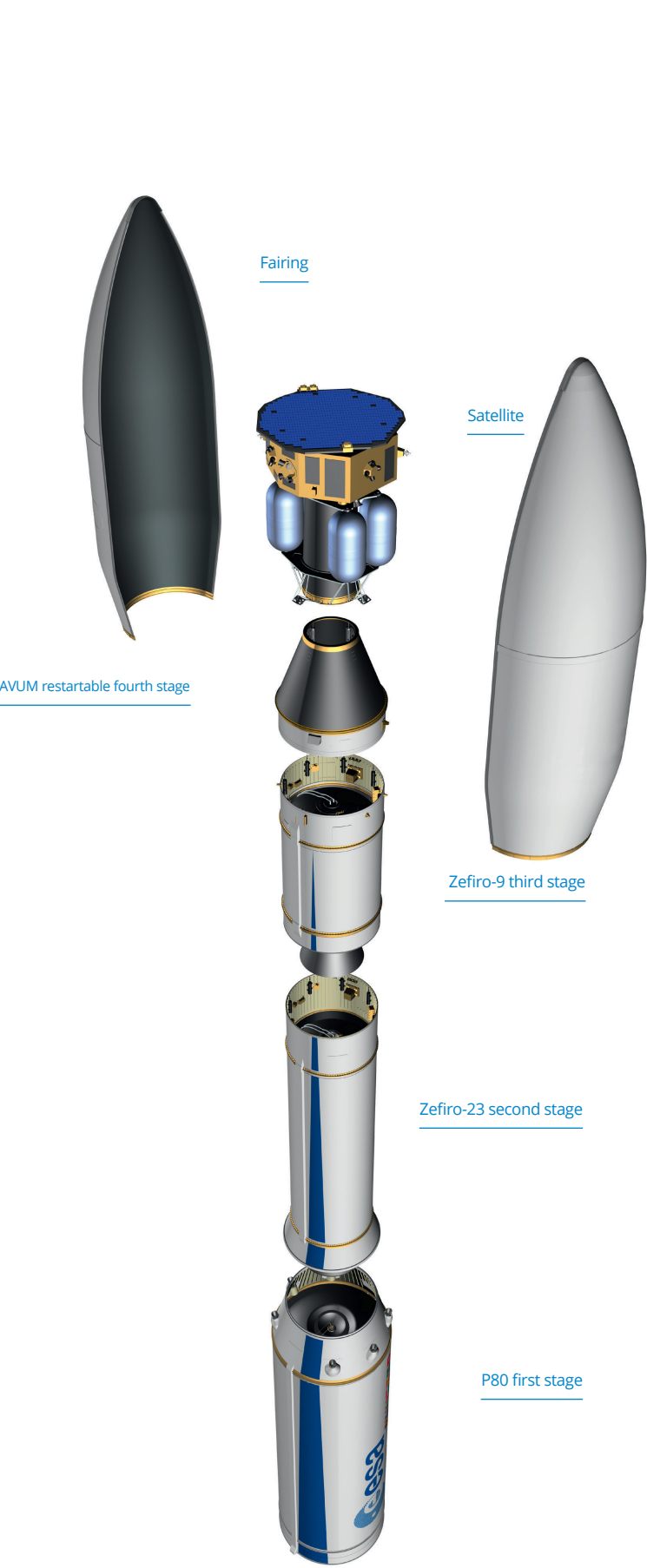
Vega is a three-stage solid-propellant vehicle with a liquid-propellant manoeuvrable injection module. Its main objective is to provide Europe with a safe, reliable, competitive and efficient capacity for scientific and Earth observation payloads.

With more than 10 successful flights of the Vega launcher since its introduction in 2012, Arianespace offers the world's broadest range of commercial launch services with its Ariane 5, Soyuz and Vega family.

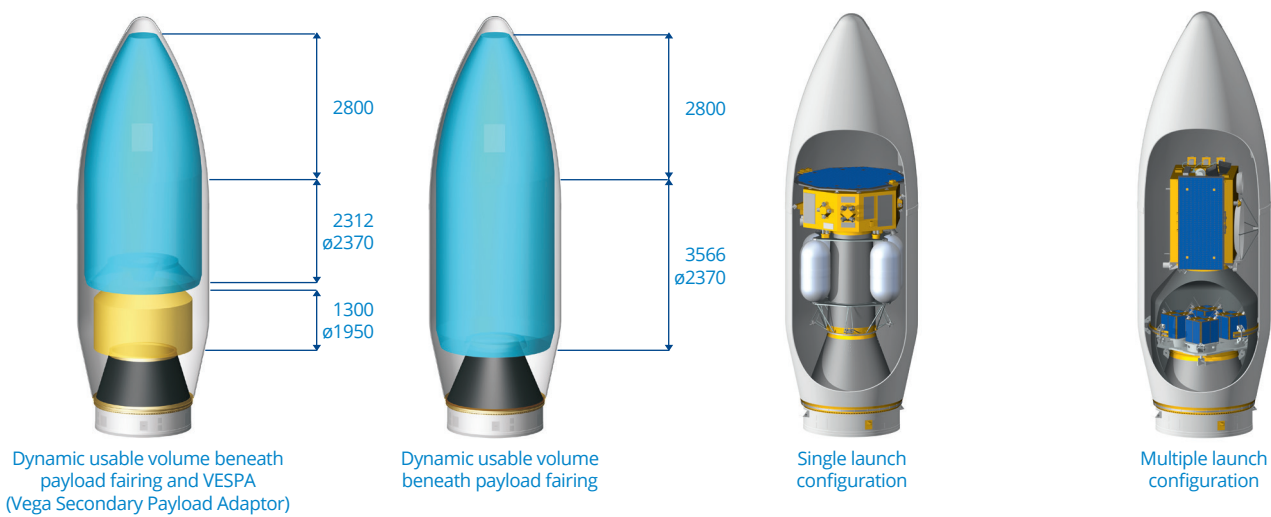
## Light launcher for small payloads

Vega responds to the commercial market's requirements for a new-generation lightweight launch vehicle capable of orbiting small to medium-sized satellite payloads.

The wide range of launch azimuths available from Europe's spaceport in Kourou, combined with the flexibility provided by AVUM, enables Vega to deliver a wide range of payloads into different orbits, from 2,500 kg to a circular near-equatorial orbit at 200 km, to 2,000 kg towards the International Space Station or almost 1,300 kg into a 800 km-high Sun-synchronous orbit.



Industrial Prime contractor: **AVIO**



## Direct delivery to circular orbits

Earth observation, meteorological and scientific satellites benefit from Vega's ability to deliver them directly into sun synchronous orbits (SSO), polar circular orbits, or circular orbits of different inclinations.

## Restartable capability

The restartable Attitude and Vernier Upper Module (AVUM) offers a great flexibility to servicing a wide range of elliptical orbits. Its engine can perform up to 5 burns in flight.

## Multiple separation capabilities

The AVUM is also able to perform multiple separations with mission peculiar payload dispensers.

## Back-up capabilities for small satellites

The advent of Vega launches at CSG provides the needed capacity to adjust the launch offering by handling the light satellites that could not be easily paired with the mid-sized payloads on the Soyuz manifest. In other terms, the Vega launch service allows the Sun Synchronous or Earth observation satellites to benefit from dedicated launches, and represents an efficient and complementary offer with respect to the medium and heavy launchers from the Arianespace family. Therefore, Arianespace increases the flexibility of its offer and the added value for the customer.

## Standard Vega Mission Profile For Sun-Synchronous Orbit

