

27 March 2008

## **AVIO, THE SECOND STAGE OF THE VEGA LAUNCHER PASSES THE QUALIFICATION TEST**

This morning, Zefiro 23, the engine powering the second stage of the European satellite launcher Vega, for which Avio is prime contractor through its subsidiary company ELV, passed with flying colours the qualification test conducted at the interforce Firing Ground of Salto di Quirra in Sardinia.

Today's test is a fundamental step in the qualification of the second stage of the launcher and its liquid propellant engine, and it is part of a cycle of tests performed in 2006 and 2007. It determined the qualification of a space vehicle engine entirely conceived and constructed based on Italian technologies developed at the Avio plant in Colleferro. The test, that lasted 80 seconds, was designed to assess compliance with the functional and mission characteristics to be met before the construction of the flight unit can get underway.

Zefiro 23 is 7.5 m high, 2 m in diameter, it has a total weight of 26 tons, 24 of which are accounted for by the solid propellant. It is activated after 107 seconds of the launch, and is designed to lift the Vega from 44 to 100 kilometres from the ground in 80 seconds, the same time as it takes to complete the test.

The different parameters – pressure transients, temperature and combustion rate, thrust profile, orientation control by means of the electromechanical actuators powered by lithium-ion batteries – all confirmed the success of the test.

For the development of the new launcher, ESA (the European Space Agency) invested 320 million Euro. Italy plays a primary role in the program, making available public and private resources that pay for a 65% share of program costs. ELV (70% Avio, 30% Italian Space Agency) is the prime contractor, in charge of the development, qualification and production of the entire launcher. Moreover, Avio makes a direct contribution to the program by supplying the propulsion systems for all the stages, the operational structure and the human resources needed for the project. The initial missions of the Vega have already been commissioned by the ESA for orbiting a number of satellites of its design, thanks to an additional subsidy of 250 million Euro approved at a Meeting of the Ministers of the ESA Member States in December 2005.

The Vega – 30 m high, 3 m in diameter and with a weight of 137 tons – is part of the ESA family of launchers. Optimised for placing small-sized satellites in low orbits at reasonable costs, it has been specially designed to foster the launch of scientific satellites at the request of universities, research institutes and private companies. It will be able to perform a wide range of missions, with circular orbits at different

altitudes (from 300 to 1,500 km) and angles of inclination of between 5° and 100°. Its transport capacity is 300 to 1,500 kg, and it will be able to carry six satellites per launch.

The next major stage in the program, the qualification of Zefiro 9, the third solid propellant stage, is scheduled to take place in June, again at the Firing Ground of Salto di Quirra. This test will complete the qualification process for the three solid propellant stages making up the launcher.

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### **Avio SpA**

Avio is present in Italy and abroad with 16 plants and 4800 employees. It works in four sectors of activities: modules and components for aircraft engines, civil and military engine overhauling, space, and aircraft-derived turbines for marine applications. It is a world leader in mechanical transmissions and turbines, Italy's leading manufacturer of aircraft engines and number one in Europe in the field of solid propellant space propulsion systems.

Avio website: [www.aviogroup.it](http://www.aviogroup.it)

## **TEXT**

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Founded in 1908, Avio is a leader in the aerospace sector and is present in Italy and abroad with 16 plants and 4800 employees. In 2006 its turnover came to 1401 million Euro. It works in four main sectors of activities: modules and components for civil and military aircraft and helicopter propulsion systems; MR&O and services for military and civil aircraft and helicopter engines; space propulsion and tactical propulsion systems; aircraft derived engines and automation systems for naval and industrial applications. It is Italy's leading manufacturer of aircraft engines, a world leader for mechanical transmissions and number one in Europe in the field of solid propellant space propulsion systems.

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