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## **AVIO: the third stage of the Vega launcher passes the test**

The bench test conducted on the Zefiro 9A – the upgraded version of the engine powering the third stage of satellite launcher Vega, for which Avio is prime contractor through its subsidiary company ELV – was completed successfully. The test took place at the Interforce Firing Ground of Salto di Quirra in Sardinia and it lasted 120 seconds. It has provided confirmation that Zefiro 9A is the space engine in its class offering the best performances ever. The engine will be activated at a distance from the earth of 100 km and will carry the Vega to an altitude of 150 km in but two minutes.

The favourable outcome of this qualification test paves the way for the construction of an engine prototype, entirely conceived and manufactured on the basis of Italian technologies developed at the Avio plants. Zefiro 9A is 3.50 m high, has a diameter of just under 2 m, weighs 10 tons and burns 9 tons of solid propellant.

Preceded by a series of functional tests, the firing test made it possible to collect valuable data on the characteristics of the stage: pressure and temperature transients in the combustion chamber, grain erosion rate, evolution of the thrust, thrust orientation control by means of the newly designed electromechanical actuators powered by innovative Lithium-ion batteries. The preliminary results confirm the success of the test and indicate that this engine stage will make a valid contribution to the preparation of the launcher's flight model.

The Vega – 30 m high, 3 m in diameter and with a weight of 137 tons – is part of the European Space Agency (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 degrees. Its transport capacity is 300 to 1500 kg, and it will be able to carry six satellites per launch.

The qualification launch, scheduled to take place in late 2009, will enable marketing activities by Arianespace to get underway in 2010. The initial frequency is expected to be two launches per year, which should increase to four in the new future.

### **AVIO SpA**

A leader in the aerospace sector, founded in 1908, Avio is present in Italy and abroad with 18 plants and ca 5000 employees. In 2007 company turnover totalled 1,553 million Euro. Avio engages in design, production and maintenance activities in 4 main business sectors: modules and components of propulsion system for civil and military aircraft and helicopters; MR&O and supporting services for propulsion systems for civil and military aircraft and helicopters; space propulsion and tactical propulsion systems; aeroderived engines and automation systems for naval and industrial applications. It is Italy's most important aircraft engine manufacturer, a world leader for mechanical transmissions, and No. 1 in Europe for solid propellant space propulsion. Avio is the prime contractor for the new European Launcher Vega.

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