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Vega launcher engines ready for lift-off

Avio, prime contractor for Vega Launcher

The qualification and certification phase for the three solid propellant engines for Vega has been passed with flying colours.

The last engine, the third stage of the new European Vega launcher, Zefiro 9, manufactured by Avio, has completed all the qualification stages and is now ready, together with Zefiro 23 and P-80, for the production stage, after which propellant will be loaded and the engines will be shipped to French Guyana where they will be assembled for the first launch planned for 2010.

The firing test took place at the Interforce Firing Range of Salto di Quirra in Sardinia and confirmed the expected performance of the engine. It will be the last to be activated after the first and second stages, and will carry in 120 seconds the Vega from an altitude of 110 km to 146 km above the earth's surface.

The three solid propellant engines constructed by Avio will provide the main propulsion for the Vega launcher.

The structure of the first stage of the Vega, the P80 engine, in a few days will leave the plant in Colleferro (Rome) for French Guyana. After a sea voyage lasting twenty days the propellant will be loaded at the Regulus plant (Avio Group) on the Kourou Space Base. The engine casing is constructed by Avio using the new carbon fibre technology. It is lightweight and, thanks to special internal thermal protection, able to withstand extremely high temperatures and pressure. A further evolution in this fibre is being studied with IMAST, the technological District on Materials Engineering and Structures based in Campania (Italy).

This paves the way for the construction phase of the European Vega launcher, the first to be assigned by the European Space Agency entirely to an Italian company.

Avio, which develops and produces the launcher through its subsidiary ELV, is the prime contractor for 40 European companies and continues to occupy a leading position in the European space sector representing Italian high technology. The highlight of the ESA's current programme is the feather in the cap of the Italian industry, and through Avio Italy plays a leading role in the European launcher market.

P80:

This is the first stage of the Vega launcher. It is the largest one-piece solid-propellant engine ever built using Filament Winding technology. The first bench test was performed successfully in late 2006 at the Kourou Space Base in French Guyana, and then confirmed in late 2007 when the engine passed the qualification test with flying colours, also in French Guyana.

Zefiro 23:

This is the second stage of the Vega launcher. It is also constructed using Filament Winding technology and successfully passed the first bench test at the Experimental Firing Range of Salto di Quirra in Sardinia in mid 2006. The firing qualification test was carried out at the end of March 2008, again at the Interforce Firing Range of Salto di Quirra in Sardinia.

Zefiro 9:

This is the third stage of the Vega launcher. Produced using Filament Winding technology, this was the first engine to be successfully fired at the bench test performed at the Experimental Firing Range of Salto di Quirra in Sardinia at the end of 2005. The qualification firing test, which was performed in early 2007, was not successful owing to a nozzle defect that has now been resolved. The qualification firing test held on 28 April confirmed the favourable outcome of the Zefiro 9A which was upgraded in late 2008.

AVIO

A leader in the aerospace sector, founded in 1908, Avio is present in Italy and abroad (USA, Poland, Netherlands, Germany, France, French Guyana) with 18 plants and over 5500 employees. In 2008 company turnover exceeded 1,600 million Euro. Avio engages in four main business sectors, including both civil and military fields: Aeronautics, Space, MR&O and Services, Marine and Aeroderivative.

Aeronautics: Avio designs and produces modules and components for propulsion systems for aircraft and helicopters. Avio is national champion in aeroengines and world leader in mechanical transmissions.

Space: Avio is European leader in the development and manufacture of solid propellant motors for space propulsion, and is Prime Contractor for the new European space launcher, Vega. Furthermore, the Company develops and manufactures tactical propulsion systems.

MR&O and Services: Avio carries out the maintenance and repair of aeroengines, and management services for aircraft and helicopter propulsion systems.

Marine and Aeroderivatives: Avio supplies aeroderivative turbine motors and automation systems for marine and industrial applications and for electricity production.

Avio website: www.aviogroup.com