

# **VOLVO AERO**

## **Press Information**

### **VOLVO AERO, ASTRIUM AND DLR CO-OPERATE TO DEVELOP THRUST CHAMBER TECHNOLOGY**

**Volvo Aero, Astrium and DLR have decided to co-operate in order to develop thrust chamber technology. The aim of the co-operation is to gain experience and knowledge for the further development of thrust chambers for main-stage engines of space launch vehicles. The parties will run a series of hot-firing tests, preparing for future thrust chambers with considerably higher expansion ratios than today.**

The actors in the space market are constantly striving to develop launch vehicles with better performance, allowing for higher lift capacity at a lower cost. Ariane 5 is no exception, where the aim is set for future versions with even better performance than today. This is the background for a need of longer nozzles with altitude compensation, also known as Flow Separation Control.

Longer nozzles bring a number of technical challenges, like higher pressure loads, vibrations and heat. During the launch, the pressure inside the nozzle exhaust is lower than ambient air at low altitudes and the supersonic exhaust flow separates from the wall. In the area where the separation takes place, the thermal loads are the highest. The engineers of Volvo Aero, Astrium and DLR will conduct tests to find out how to master these problems.

Testing of sub-scale combustors and nozzles will take place at the DLR facilities in Germany. They are to be concluded by the end of year 2002. The results will be used for the further development of the Ariane 5 main engine, Vulcain.

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## **Background facts**

**Volvo Aero**, a wholly owned subsidiary of AB Volvo, develops and produces components for aircraft and rocket engines with a high technology content in cooperation with the world's leading aerospace companies.

Volvo Aero is the world's biggest commercial supplier of rocket combustion chambers / exhaust nozzles. The company develops and manufactures engine components for Europe's Ariane rockets, the largest launch vehicle program in the world.

For Volvo Aero, this co-operation is a way of ensuring the company's position as leading within nozzle technology.

**Astrium** was formed in May 2000 by the merger of Matra Marconi Space (France/UK) and the space division of DaimlerChrysler Aerospace (Germany). It is a joint venture owned by EADS with a 75% holding and BAE Systems with 25%.

Astrium's activities cover the whole spectrum of the space business, with expertise in all applications: Earth observation and science, telecommunications, ground systems, navigation and military programs, launch vehicles and orbital infrastructure.

The company employs around 7 500 people in France (Vélizy and Toulouse), Germany (Ottobrunn, Bremen and Friedrichshafen) and the UK (Stevenage and Portsmouth).

**DLR** is the national aerospace center of Germany. DLR is engaged in a wide scope of research and development projects in aviation, space and energy. After a merger with the German Space Agency (DARA) in 1997, DLR manages, beyond its research activity, the German space program on behalf of the Federal Government.

DLR maintains locations in Berlin, Bonn, Braunschweig, Göttingen, Köln-Porz (headquarters), Lampholdshausen, Oberpfaffenhofen and Stuttgart as well as offices in Paris and Washington.

The budget is financed primarily by public funds; one third, however, is earned by contracts in Germany and abroad. The R&D budget for 2001 is 440 M€, of

which 190 M€ is space related. Total personnel is 4 280, where 1 010 is working with space.

*The Volvo Group is one of the world's leading manufacturers of trucks, buses and construction equipment, drive systems for marine and industrial applications and aircraft engine components. The Group also provides complete solution for financing and service. The Group has about 78,000 employees, production in 25 countries and operations are carried out in more 185 markets. Annual sales of the Volvo Group amount to nearly SEK 200 billion.*