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European supply spacecraft ATV Jules Verne launched successfully

9 March 2008

Launch of Europe's ATV

ATV expected to dock to the International Space Station in early April

In the night of 9 March 2008, the first autonomous European supply spacecraft, the Automated Transfer Vehicle (ATV) named 'Jules Verne', was launched towards the International Space Station (ISS). As the heaviest payload to date of an Ariane 5 launch vehicle, Jules Verne lifted off from the European Space Agency ESA's space centre in Kourou in French Guiana at 5:03 Central European Time. As a prototype for future ATV missions, Jules Verne will demonstrate all ATV functions and manoeuvres under real conditions for the first time. After separating from Ariane's upper stage, the ATV is expected to automatically dock with the Russian Station module *Zvezda* on 3 April.

A substantial contribution to servicing the ISS

The ATV programme is the European contribution to the maintenance of the International Space Station. The ATV prototype is carrying 5.5 tonnes of food and fuel. Moreover, the ATV will boost the ISS to a higher orbit using its main engines. This procedure is necessary to correct the station's orbit. At the end of its mission, the ATV will offload up to 6.5 tonnes of waste from the ISS. This August, a controlled re-entry into Earth's atmosphere is expected to take place, during which the ATV will burn up

completely over the South Pacific. At this moment, at least five of such missions are planned up to 2013.

Substantial German participation

Docked with the ISS - cutaway view of the inside of the ATV

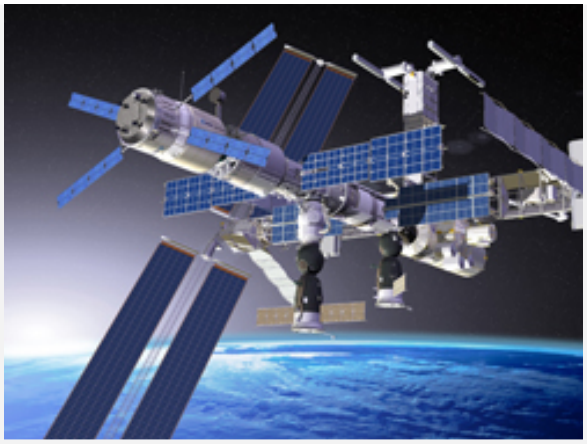
The costs for developing and building the ATV-1 Jules Verne amount to over 1 billion euros. German companies received orders to a value of about 24 percent of this amount. For the production of the four additional ATV supply spacecraft, which will make a substantial contribution to the maintenance of the ISS up to 2013, the share of German companies is around 46 percent, or 400 million euros.

EADS Astrium Space Transportation in Bremen is the prime contractor. In addition to this, several German companies are involved in the production of the ATVs: Azur Space Solar Power GmbH (solar cells), SAFT Batterien GmbH/FRIWO GmbH (non-rechargeable batteries), Jena Optronik (parts of the optical sensors), OHB/MT-Aerospace (cabling, tanks, development of the meteorite protection shield) and TESAT Spacecom GmbH & Co KG (procurement management for all electronic components).

From its control centre in Oberpfaffenhofen, DLR monitors and coordinates the overall communication between the other mission control centres in Toulouse, Houston, Moscow and Redu in Belgium. In addition, in Lampoldshausen, DLR carries out test campaigns for the German re-ignitable upper stage engines of the Ariane 5 for use in the ATVs. In these tests, which lasted until last March, DLR was able to qualify two Aestus engines for use in the first two ATV missions.

The DLR Institute for Aerodynamics and Flow Technology (DLR-Institut für Aerodynamik und Strömungsforschung) in Göttingen is also involved. In its plume simulation facility, unique in its kind in the world, research was conducted into the expansion, temperature and contamination behaviour of vernier engines under space conditions. The results of this research influenced the arrangement of the ATV vernier engines, amongst other things.

DLR Chair Wörner: "Great potential for future space travel applications”



ATV docked with the ISS

"The ATV technology has great potential for possible future space travel applications," said Professor Johann-Dietrich Wörner, Chairman of the Executive Board of the German Aerospace Center (Deutsches Zentrum für Luft- und Raumfahrt; DLR): "One could envisage further development based on this project and on the available expertise in Europe. A first step could for instance be to use the ATV as a transport spacecraft capable of transporting cargo from the ISS back to Earth.

Technical data

The ATV is about ten metres long and has a diameter of 4.5 metres. With its solar panels unfolded, the ATV has a span of 22.3 metres. The total mass of Jules Verne when loaded and ready to launch is almost 20 tonnes. The vehicle consists of one section for the drive and the steering. In addition it has a pressurised payload segment, which is entered by the astronauts from inside the ISS during the loading and offloading of the ATV.

The ATV is a joint European project led by the European Space Agency (ESA). The mission operations are monitored from ESA's control centre in Toulouse. The German Federal Ministry of Economics and Technology (Bundesministeriums für Wirtschaft und Technologie; BMWi) has authorised DLR to be in charge of programme coordination and to represent German interests in ESA's ISS programme.

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