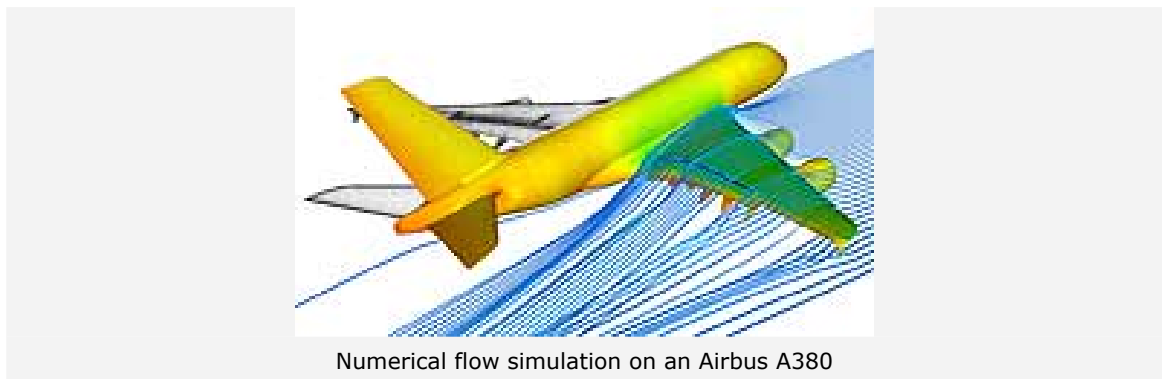


News Archive Space 2009

DLR at Moscow Aviation and Space Salon, MAKS 2009

17 August 2009



Numerical flow simulation on an Airbus A380

For the third time since 2005, the German Aerospace Center (Deutsches Zentrum für Luft- und Raumfahrt; DLR) is taking part in Russia's national aerospace exhibition, the MAKS Aviation and Space Salon. The exhibition is being held at Zhukovsky, 40 kilometres southeast of Moscow. From 18 to 23 August, DLR will showcase itself as Germany's national research establishment at a joint stand with the German aerospace industry.

"Russian aerospace research includes some of DLR's most important cooperation partners," Prof. Johann-Dietrich Wörner, DLR executive board chairman, said. Prof. Wörner continued: "The positive aspects of German-Russian cooperation in the economic and, in particular, the scientific field are governed by the current scientific and business relations and will be further expanded over the long term."

The 100-square-metre stand will highlight research and development activities that exemplify DLR's scientific work and show potential for international cooperation.

C²A²S²E simulation centre



The MAKS Aviation and Space Salon 2009 at Zhukovsky

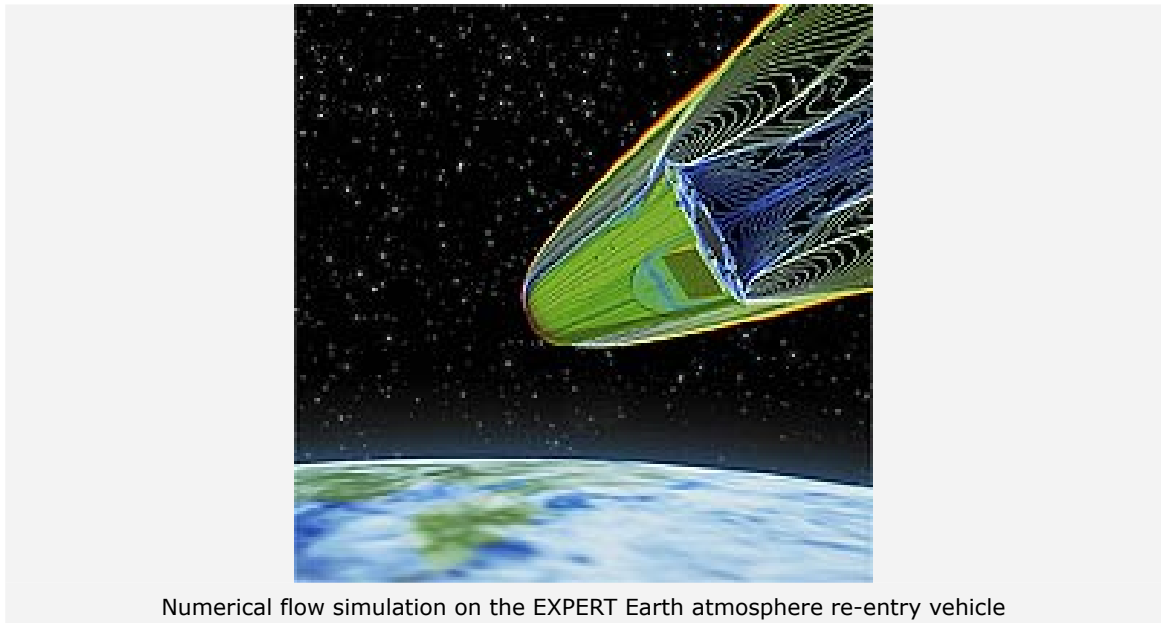
DLR operates a supercomputer for aerospace research at the C²A²S²E (Center for Computer Applications in AeroSpace Science and Engineering) simulation centre in Brunswick. The computer forms the heart of the simulation centre and is Europe's fastest supercomputer for aerospace research.

The tasks of the project, financed by Airbus, the State of Lower Saxony and DLR with a total of 30 million euro, include developing processes, methods and numerical techniques that enable the high-precision simulation of an aircraft throughout its flight envelope.

eROSITA X-ray telescope – the hunt for dark energy

The universe has been expanding ever since the Big Bang – and this expansion might be expected to be slowing down under the influence of gravity. Instead, the expansion is accelerating, driven by a poorly understood phenomenon referred to as 'dark energy'. The eROSITA (extended ROentgen Survey with an Imaging Telescope Array) X-ray telescope is planned to throw light on the darkness. The telescope is being built under the lead management of the Max Planck Institute for Extraterrestrial Physics in Garching. It is to be launched in 2012 on the Russian 'Spektrum Roentgen Gamma' (SRG) probe and remain in orbit for at least seven years to search for this mysterious substance. As part of the German national aerospace programme, this mission is financed by DLR in its capacity as the national aerospace agency.

The EXPERT project – a fibre-reinforced ceramic nose cap for Earth atmosphere re-entry vehicles



Numerical flow simulation on the EXPERT Earth atmosphere re-entry vehicle

The objective of the EXPERT (European eXPERimental Reentry Testbed) project, a European experimental re-entry vehicle, is to improve the understanding of critical aerothermodynamic phenomena associated with hypersonic re-entry flights. Experiments on board EXPERT will obtain aerothermodynamic data in a representative flight environment for the validation of numerical models and of ground-to-flight extrapolation methodologies. The central component of EXPERT is the fibre-reinforced ceramic nose cap, which will be produced by the DLR Institute of Structures and Design (Institut für Bauweisen- und Konstruktionsforschung) in Stuttgart. Earlier developments in Europe for the Hermes spaceplane and for the X-38 experimental craft showed that there is a great need for data from hypersonic flights and re-entry.

The VITAL project – a new fan concept

Based on DLR developments and the knowledge acquired from them, a counter-rotating, efficient and noise-optimised fan is being designed and experimentally tested in the EU 'VITAL' project, together with the further improvement of modern classic fans. As a partner in the VITAL project, the DLR Institute of Propulsion Technology (Institut für Antriebstechnik) in Cologne, together with the Institutes of Structures and Design, Materials Research and Aeroelasticity, is responsible for the aerodynamic and aeroelastic as well as the acoustic and mechanical design of the fan.

'Mars500' – a virtual flight to Mars



Mars500 isolation chamber in Moscow

The 105-day space travel simulation experiment 'Mars500', with German involvement, finished in Moscow on 14 July 2009. On this day the crew – including Oliver Knickel, a member of the German armed forces – left the module system at the Institute for Biomedical Problems (IBMP) of the Russian Academy of Sciences in Moscow. The central question in the Mars500 study was: how can the physical and psychological performance capabilities of a person be maintained under the extreme conditions of a long-term space mission? DLR is a key participant in Mars500 together with the IBMP and the European Space Agency (ESA). DLR research institutes contributed several experiments. In addition, DLR, in its capacity as national aerospace agency, provided the project with financial support from the German government.

The Centre for Satellite-Based Crisis Information (ZKI)

The Centre for Satellite-Based Crisis Information (Zentrum für satellitengestützte Kriseninformation; ZKI) is a facility of the German Remote Sensing Data Centre at DLR. Its task is the rapid acquisition, processing and analysis of satellite data in the event of natural and environmental disasters, for humanitarian relief activities and for civil defence. The analyses are tailored to meet the specific requirements of national and international bodies as well as relief organisations. ZKI operates in a multinational context and is closely networked with various partners at a federal and regional level (crisis centres, civil defence and environmental protection), non-governmental organisations (humanitarian relief organisations) as well as satellite operators and space agencies.

New procedures for the manufacture of commercial aircraft structures

Using the example of a doorframe as a demonstrator, DLR has showed a new procedure for the cost-efficient production of commercial aircraft structures made of carbon-fibre reinforced plastics (CFRP). The advantages of the technology are, among other things, the enhancement of cost efficiency through the combination of various tools and materials and a reduction in the number of production stages during manufacture.

Related Contacts

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