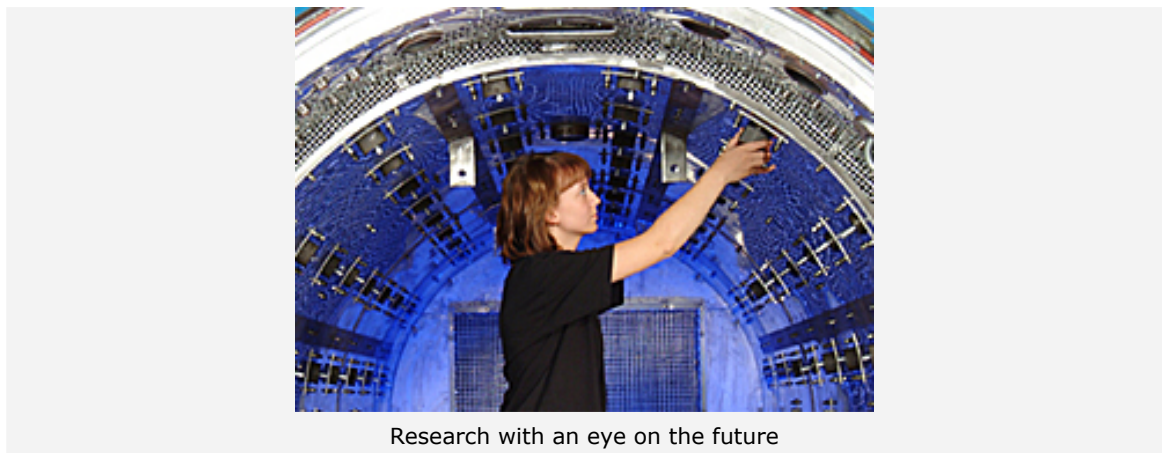

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Knowledge for tomorrow – DLR Annual General Meeting 2009

26 November 2009



Research with an eye on the future

Scientists from DLR present a selection of current research projects

The Annual General Meeting of the German Aerospace Center (Deutsches Zentrum für Luft- und Raumfahrt; DLR) takes place on 26 November 2009 in Berlin-Adlershof. One hundred years ago, the first airfield in Germany was founded at this site and three years later, on the initiative of Count Zeppelin, the foundation stone of the German Aviation Testing Establishment (Deutsche Versuchsanstalt für Luftfahrt; DVL), a predecessor of DLR, was laid. DLR scientists and engineers will present examples of their current research projects under the motto "From the past, to the present and into the future."

In addition to current research projects, Johann-Dietrich Wörner, Chairman of the Executive Board of the DLR, will highlight a fundamental process at DLR. "Last year, DLR took an important step in addition to all of its scientific successes. A strategic process was initiated, in which our medium- and long-term direction is being set out in concrete terms. Based on the excellent reputation that DLR enjoys, goals are being defined and the paths to further shaping our future are being described. Especially important to me personally during this readjustment process is the active participation of all of our almost 6,500 employees, who have been able to contribute their visions concerning the scientific excellence and attractiveness of DLR from their individual perspectives."

Research and budget - the DLR in 2009 in facts and figures

In addition to receiving funds from the federal budget for research in the fields of aviation, spaceflight, energy and transport, in 2009 DLR was able to procure additional monies from the federal government's economic stimulus packages. The 50 million euro in funds provided by the federal government was, for the most part, used for the procurement of new scientific equipment and operational facilities. These included a new diffusion furnace for the study of molten metals and the construction of a Ka-band ground station to provide the significantly increased data transfer rates required for future satellite missions. Also, as part of these economic stimulus packages, the states of Bavaria, Lower Saxony and North Rhine-Westphalia contributed a total of more than 15 million euro to DLRden.



Productive researchers and attractive research topics

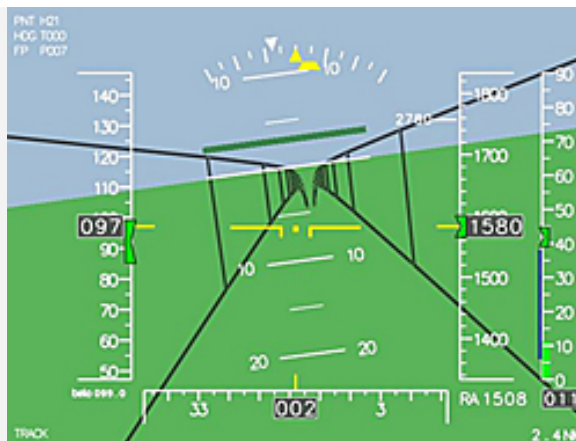
Additionally, in 2009 DLR's technology marketing department generated almost four million euro from licenses, oversaw two business spin-offs to wholly owned subsidiaries and invested more than three million euro in 15 new technology transfer projects with industry. DLR's technology marketing department supports companies along the path from their idea to the finished product and offers its expertise and various models for collaboration with industry.

Excellent research and good opportunities for young scientists

More than 1,000 papers published in national and international scientific journals during 2009 confirm the productivity and excellence of DLR's scientists. As part of a programme to support young talent, almost 400 degree dissertations and doctoral theses were supervised on topics covered by DLR research. Also, during the last year, the research topics and the activities for promoting young academics at DLR led to it being voted one of the ten most popular employers in the field of science. The extent of interest in DLR's research fields was also apparent at the Air and Space Travel Day 2009, held on 20 September in Cologne. More than 100,000 guests attended the event.

Missions and projects

The guiding principle for DLR is to provide socially relevant contributions in order to solve current problems by intensively networking its fields of research and by collaborating with industry and other research facilities. "Science always checks to see where the boundaries are, in order to transcend them," is how Prof. Wörner paraphrases the work of DLR.

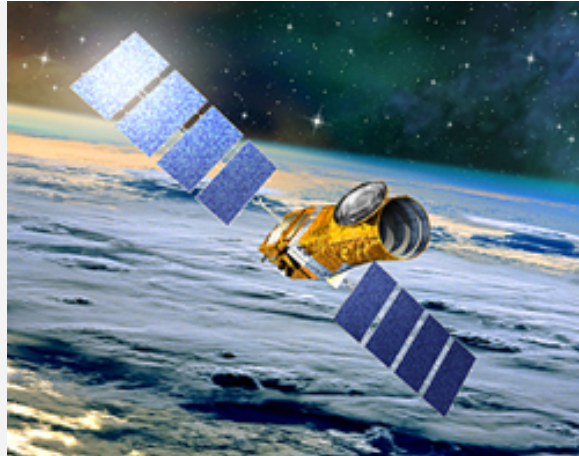


Quieter flying with 'Friendcopter'

Aviation

The main priority for DLR's aviation research is to strengthen the competitiveness of the German and European aircraft industry and the aviation sector as a whole, while simultaneously addressing political and social requirements. One of the important tasks is to make the fast-growing aviation industry efficient, environmentally friendly and sustainable. This field of research currently covers the core areas of fixed-wing aircraft, rotary-wing aircraft and propulsion systems, as well as air traffic management and flight operations.

A multitude of successes in the field of aviation research have been achieved through the systematic development and testing of simulation processes. For example, Avantgarde (Advanced Numerical Tools Graduation by Application in Aeronautical Research and Development) allows highly accurate numerical analyses in the fields of fluid mechanics and aeroacoustics. These procedures help to optimise noise control, for example by means of quieter flight routes and weather-dependent traffic regulations. DLR is also developing systems for reducing noise emissions, such as the Friendcopter (Passenger and Environmentally Friendly Helicopter) project. In the Impulse (Innovative Methods for Prediction of Unsteady Aerodynamic Data for Loads, Stability and Control for Complete Flight Envelope) project, methods for dealing with difficult flight situations are studied, for example: an aircraft facing a squall. CoSiCab+ (Comfortable and Silent Cabin +) is an example of work to improve passenger comfort in aircraft cabins.



The European satellite CoRoT discovered rocky planets

Space

Germany's national and international space activities are combined within the German Aerospace Center; on the research level by DLR's space institutes and on the space policy level by DLR's Space Agency, which is responsible for the implementation of national and international space activities on behalf of the federal government.

Highlights in 2009 included the very successful 105-day spaceflight simulation experiment Mars 500, in which a German, Oliver Knickel, participated. Proof of the recognition being accorded German space activities is the appointment of another German, Alexander Gerst, as a member of the European astronaut team. The space telescope CoRoT (Convection, Rotation and Planetary Transits) discovered a rocky planet outside our Solar System. DLR is investigating the mysteries of life with a range of astrobiological and radiological experiments on the International Space Station (ISS).

Energy



Cross-sector cooperation: Antares DLR-H2

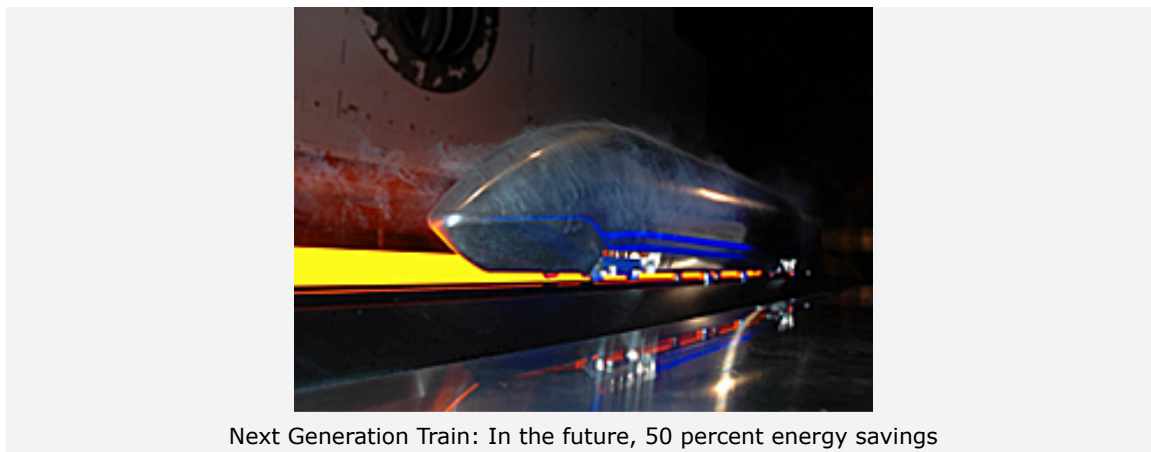
With efficient use of energy and a targeted expansion in the use of renewable energy sources, global carbon dioxide emissions can be drastically reduced. Therefore, dealing with energy efficiently is an important aspect of all of DLR's research areas. Power stations, aircraft and vehicles are all being

optimised for energy efficiency. The efficient supply of power for space applications is also being accorded great importance.

An impressive demonstration of the technical possibilities, developed as a result of the comprehensive cooperation of several business segments, was the maiden flight in 2009 of Antares DLR-H2, a powered glider that can take off using fuel cells as its only energy source. On 9 June 2009, DLR inaugurated a new test and qualification centre for concentrating solar technology, QUARZ, at its Cologne site. Manufacturers and operators of solar-thermal power plants can test the quality of important components such as mirrors and absorber pipes using the test benches and large-scale facilities.

Transport

The transport sector is an important cornerstone of our industrialised economy. It fulfils individual mobility requirements and generates jobs, as well as making up a considerable proportion of overall economic activity.



Next Generation Train: In the future, 50 percent energy savings

The Next Generation Train (NGT), a quiet double-decker, will travel into the future at a speed of 400 kilometres per hour while using 50 percent less energy. Driver assistance systems can make traffic safer. Emergency braking assists, lane departure warning systems and the electronic stability programme ESP intervene if the driver is inattentive or his/her capacities are not sufficient to prevent a potential accident. In the virtual institute DESCAS (Design of Safety Critical Automotive Systems), DLR, the University of Oldenburg and the Technical University of Braunschweig have been working together since 2007 on a safety-oriented development process that makes the design of such active safety systems even more reliable and fault-tolerant. In order to be able to realise urgently-required efficiency gains in the area of traffic management, new methods and processes are being developed. The methods developed in the ORINOKO (Operative Regionally Integrated and Optimised Corridor Control) project can provide information regarding traffic flow optimisation.

The DLR Annual General Meeting will be transmitted as a live webcast from 19:45 CET. Moderators Claus Kruesken and Uli Bobinger will present, together with DLR scientists, the research and development work conducted in 2009. This year's focus is on the DLR facility in Berlin and the fields of Space Exploration and Transport Research: the search for extraterrestrial life and 'Electric mobility - a drive into the future' will be the main topics.

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