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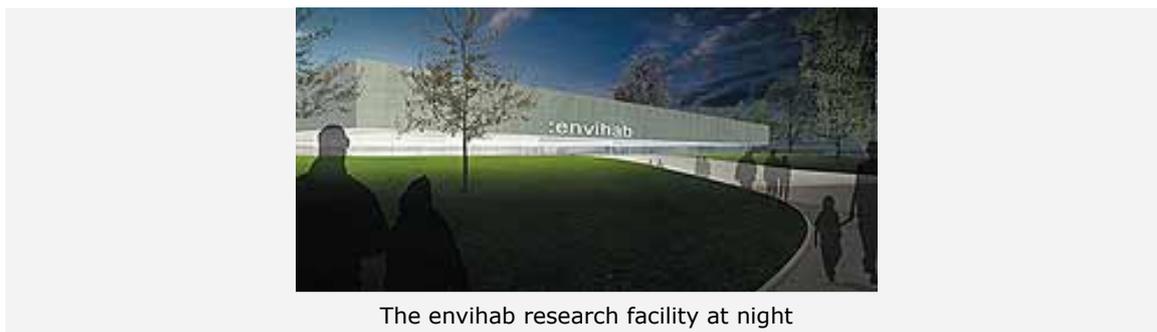
2007 Aviation and Aerospace Day – Technologies from Space in Cologne

3 September 2007

On 16 September 2007, the German Aerospace Center (DLR) will be holding its nation-wide “2007 Aviation and Aerospace Day”. This high-tech day for young and old is now held every two years at DLR in Porz, near Cologne. Companies, colleges and organisations associated with aviation and aerospace will be taking part in a variety of ways to make aviation and aerospace more accessible. This year’s patron will be Michael Gloss, Federal Minister for Science and Technology.

All DLR institutes in Porz associated with aerospace will be participating. All doors and labs will be open, with staff available for questions and explanations..

People, astronauts and pilots – The DLR Institute for Aviation and Aerospace Medicine



The envihab research facility at night

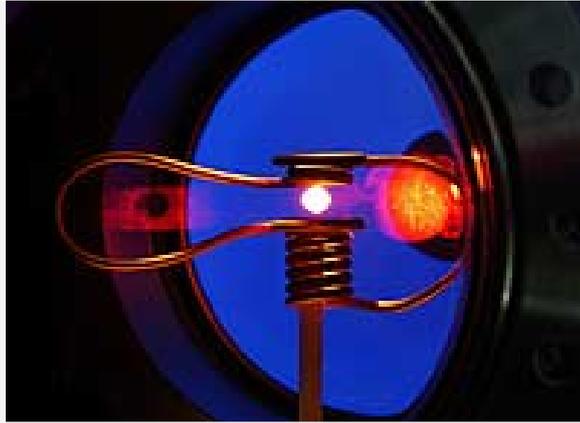
The Cologne Institute for Aviation and Aerospace Medicine investigates the effects of weightlessness and space radiation on humans, how to counteract the negative effects, and how the results of this research can be applied on Earth. The Institute also supports external scientists in the preparation and execution of space experiments. The Institute is equally involved in the medical and psychological care of airline personnel and the effects of aircraft and transport noise on passengers and residents. Construction of a new research facility, “:envihab”, accessible in part to the public, is planned over the next few years in close liaison with the 2010 Regional Programme and with finance from the state of North-Rhine Westfalia. It will look at ways to further optimise the research work and especially its applications on Earth.

On 16 September, the Institute will, among other things, showcase a new short-arm centrifuge, and the space physiology laboratories and experimental facilities (Themes: circulation, muscles, nutrition and bones, cell/molecular biology), the Scientific Information Technology Environment (SITE), and experiments and research into the subjects of noise and performance. Other interesting things to see are radiation biology (space experiments: Outline and Matroshka (model), the clinostat (weightlessness simulator), biolab model for the International Space Station (ISS), remote medicine (distance care of humans and patients – from space to Earth), plus the architectural model of :envihab..

Where wind is made is shown behind the facade using heat – the DLR wind tunnel.

The iris-heated wind tunnels L2K and L3K will be demonstrated in DLR Porz, and their associated test technology explained - the *what*, *how* and *why* of wind tunnels will be answered. Another attraction will be the DLR height research rocket SHEFEX in its flight configuration. Heat images of the faces of visitors will be recorded and printed using infrared thermography. .

From the egg-beater to sand-casting and fluid-to-solid transitions at the Cologne DLR Institute for Material Physics in Space



Electromagnetic levitation

The 2007 Aviation and Aerospace Day at the Cologne Institute for Material Physics will feature casting and the fluid/solid transition. Visitors can see how molten metals are investigated in a weightless state using electromagnetic levitation, computer simulations of how crystals grow at atomic level, and how sand is compacted. There will also be displays of the experimental equipment used on height-research rockets, a model of the A300 ZERO-G parabolic manoeuvre aircraft, and an experimental rig for new kinds of sand-casting. Small models of DLR research rockets will be cast in aluminium as visitor souvenirs of the 2007 Aviation and Aerospace Day.

Simply exciting – how materials bond at low temperatures. From material to prototypes at the Institute for Materials Research

The research focus of the Cologne DLR Institute for Materials Research is the development of new materials and manufacturing techniques for applications in aviation and aerospace travel, energy technology and vehicle engineering. In conjunction with national and international partners, the DLR institutes cover basic and application-oriented subjects. The areas of research are metallic structures, hybrid material systems and intermetallics, fibre-ceramic compound materials, thermoelectric systems, and high-temperature and functional coatings. Add to that the parallel development of numeric methods for calculating material properties with the aim of supporting the transfer of materials into industrial applications.

On 2007 Aviation and Aerospace Day, the Institute will open various laboratories and facilities: the material mechanics test lab, coating centre, Seebeck probe, frictional stirring welding system and heat exchange testing facility. There will also be models and exhibitions to see: Thrusters, thruster blades, protective coatings, WHIPOX® fibre-ceramic compound material, thermoelectric materials, metallic structures and hybrid material systems.

Highly efficient use and conversion of energy – Institute of Thermodynamics and Thermal Process Engineering



DLR demonstration facility for solar heat generation in parabolic mirrors

The Cologne DLR Institute for Thermodynamics works at making highly-efficient energy conversion technologies useful in practice, and the introduction of renewable energy sources. At its locations in Porz, Stuttgart and Almeria (southern Spain), the Solar Research Department and its national and international partners from industry and research strive to develop concentrating solar systems for heat, power and fuel generation to provide lasting energy supplies for the Earth. The DLR Institute for

Thermodynamics is the leading research organisation in Germany in the field of concentrated solar technology.

On display on 16 September will be the following research equipment in Porz: the high flow-density solar oven (25 kilowatts), the high-performance radiator (20 kilowatts), while other solar testing and qualification systems will be found in the outside areas. Aside from its solar research activities, the Institute will also present its skills with fuel cells, in heat process engineering and in systems analysis. If the sky is clear, there will be a demonstration of how concentrated solar energy can burn holes in coins.

Technology marketing, Mars and astronauts

On 2007 Aviation and Aerospace Day, under the banner "DLR innovations – High tech for the market", DLR Technology Marketing will stage presentations on some 500 square metres of numerous technologies which have already found their way into products or are soon to be launched on the market. It is the goal of Technology Marketing to adapt and apply DLR-developed research and development skills in the areas of aviation and aerospace, energy and transport for future markets and future industries, for both large and medium-size companies. Areas of application range from environmental protection (early forest-fire detection, water purification using light) to nuclear power technologies, new energies (fuel cells, rocket burners) to telemedical services from which German tourists, for example, can profit in the future if they become ill abroad.

Also on show will be: the Mars exhibition with the latest images from DLR's high-performance stereo camera, and the parabolic flight aircraft with its in-board experiments. At the EAS astronaut centre in the DLR grounds, you can find out everything about astronaut training, and reports from astronaut missions.

Free stage shows : exciting topics about heaven and earth

Starting at 10 am, a varied programme begins in the central auditorium. You can experience the very latest in aviation and aerospace travel, energy and transport at first hand.

- How can we make flying cleaner?
- How do you get a laboratory into space?
- Why fly to the Moon?
- How do we solve down-to-earth problems like mobility or energy supplies from solar power stations?

Scientists from other DLR locations will be reporting on their work until into the afternoon. From TerraSAR-X, the super-accurate radar eye in space, to future travel aids, to space-saving airport management. Future projects such as :envihab, a sealed life-support system for research into the interaction of man and environment, will become a reality on 16 September 2007 in Porz.

Related Contacts

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