German Aerospace Center
DLR


**Press releases 2010**

## DLR and DNW open wind tunnel in Braunschweig

*2 December 2010*

**Lower Saxony Minister-President David McAllister inaugurates wind tunnel**

The low-speed wind tunnel at Braunschweig

On 2 December 2010, the German Aerospace Center (Deutsches Zentrum für Luft- und Raumfahrt; DLR) opened the world's most powerful aero-acoustic wind tunnel in collaboration with German-Dutch Wind Tunnels (Deutsch-Niederländische Windkanäle; DNW). Scientists use wind tunnels to investigate the aero-acoustic properties of objects such as aircraft engines and wings. Not only is the Braunschweig wind tunnel one of the most powerful of its kind, but also it is so versatile that it can be used for cars as well as planes. This presents new possibilities for recording and reducing sources of noise pollution. The Minister-President of Lower Saxony, David McAllister, formally brought the Braunschweig aero-acoustic test centre into operation.

"'Vision 2020', a German-led coordination network of partners from 17 different countries, is promoting, among other things, an initiative to reduce the noise of new commercial aircraft by 50 percent. New technologies are being developed with this aim in mind. By updating our wind tunnel, we are providing the technical capabilities to address this," explained Professor Johann-Dietrich Wörner, Chairman of DLR's Executive Board.

**Indentifying previously undetectable noise sources**

Research on modern commercial aircraft has focussed mainly on the dominant noise sources, such as when the landing gear is extended. The noise produced by the wind tunnel itself has prevented the identification of other, smaller, sources of noise – which, when added together, are of considerable importance. The modified Braunschweig wind tunnel has made detecting these smaller sources possible. This wind tunnel is quieter than conventional tunnels because of its special fan blades. The blades in the flow ducts are specially designed to almost completely contain the noise from the fan. The test section of the tunnel is built around an acoustic plenum – an anechoic chamber – to absorb noise at frequencies of up to 40 kilohertz – too high for human ear to detect. This makes the wind tunnel quieter and allows researchers to carry out extensive acoustic tests. There is no comparable wind tunnel in Europe where these aircraft tests can be done. With a top speed of 320 kilometres per hour, the Braunschweig wind tunnel is classed as a 'low-speed' wind tunnel. The Braunschweig Low-Speed Wind Tunnel (Niedergeschwindigkeits-Windkanal Braunschweig; NWB) is limited to this top speed since aircraft are not subjected to higher speeds than this during take-off and landing, nor are cars during highway travel. Higher-speed tests are performed in 'trans-sonic' wind tunnels.

**Short design and construction phase**

The wind tunnel fan

The DLR Institute of Aerodynamics and Flow Technology worked closely with DNW to modify the wind tunnel. The project was funded by DLR and designed and implemented by the DNW. C²A²S²E (Center for Computer Applications in AeroSpace Science and Engineering), the simulation centre funded by the German State of Lower Saxony, provided the hardware needed to calculate the wind tunnel flow in advance. "Our interdisciplinary cooperation and technical capabilities meant that we could modify the wind tunnel after just one year of planning. This considerably reduced the length of the design and development phase as well as overall costs – a unique approach," says Dr Andreas Bergmann, Head of the Braunschweig Low-Speed Wind Tunnel. Setting up the new aero-acoustic wind tunnel means that the DLR will be able to make significant contributions to the increasing demand for acoustics research.

Together with the National Aerospace Laboratory of the Netherlands (Nationaal Lucht- en Ruimtevaartlaboratorium; NLR), DLR founded DNW in 1976; it a research foundation in which each partner holds a 50 percent stake. DNW owns the largest low-speed wind tunnel in Europe and also runs the NLR and DLR wind tunnels used for aviation research – referred to as aviation tunnels – which are fully integrated parts of the foundation. The aim is to provide customers from industry and research institutions with a complete single source for wind tunnel testing and simulation.

**Related Contacts**

**Andreas Schütz**
Deutsches Zentrum für Luft- und Raumfahrt (DLR) - German Aerospace Center
Corporate Communications, Spokesman
Tel: +49 2203 601-2474
Mobile: +49 171 3126466
Fax: +49 2203 601-3249
E-Mail: andreas.schuetz@dlr.de

**Jasmin Begli**
German Aerospace Center (DLR)
Corporate Communications, Braunschweig
Tel: +49 531 295-2108

Fax: +49 531 295-2271
E-Mail: Jasmin.Begli@dlr.de

**Dr Andreas Bergmann**
German Aerospace Center (DLR)
Low-Speed Wind Tunnel
Tel: +49 531 295-2450
Fax: +49 531 295-2829
E-Mail: Andreas.Bergmann@dlr.de

---

*Contact details for image and video enquiries as well as information regarding DLR's terms of use can be found on the DLR portal imprint.*