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New simulator centre at DLR Braunschweig

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Helmholtz Association approves financing

FHS-Simulator

The German Aerospace Center (Deutsches Zentrum für Luft- und Raumfahrt – DLR) at Braunschweig will be starting construction of a new flight development simulator centre. The Helmholtz Association has approved financing for the amount of €8.9 million. A further €1 million will be made available by the state of Lower Saxony (Niedersachsen) as part of the Research Airport Project at the Technical University of Braunschweig (TU Braunschweig).

"We are very pleased that the Helmholtz Association has decided to finance our project," says Prof. Dr-Ing. Stefan Levedag, Director of the DLR Institute of Flight Systems (Institut für Flugsystemtechnik). "The new simulator centre represents a quantum leap for our flight development programmes. It will form the link between the DLR's flight prototypes and the systems laboratory of the Institute of Flight Systems and will be the only development facility of its kind in Europe," Levedag continues. The collaboration between DLR and TU Braunschweig is now entering the project-planning phase. The new simulator building is scheduled to be completed by the middle of 2011. Development of the simulator components and its very complex software will begin in 2010. The cockpits will be developed in the current building and coupled to already existing systems.

New possibilities for research

Model of the ATRA (Advanced Technology Research Aircraft)

The simulator centre, as the link between the applied research of DLR and TU Braunschweig's educational programmes, will primarily serve to prepare test flights for the Advanced Technology Research Aircraft (ATRA) platform, a modified Airbus A320, and the Flying Helicopter Simulator (FHS), a modified Eurocopter EC135. Its modular design will enable parallel research on helicopters and fixed wing aircraft, as well as mobile and fixed simulators. The simulator's cockpits will be exchangeable.

Man-machine interface

A core concern of the centre is research into the dynamic interface between man and machine. Among other things, this means development of optimised side-sticks, which are mounted to the side of the pilot in place of the conventional joystick and have been proved in the field on modern Airbus aircraft for some years. By developing feedback-based mechanical resistance to pilot inputs, they can give a direct sensation of the aircraft's response to flight-control movements. The centre also tests helicopter pilot assistance systems, to improve flight stability with externally suspended loads and will also test all-weather capabilities including simulated landings in poor visibility. A further subject of research is interaction with wake vortices; in other words, interaction with the turbulence created by other aircraft flying in front of the simulated aircraft.

The centre will also open up completely new areas of research, including testing innovative aircraft configurations (for instance, flying wings) and evaluating the quality of simulator training for pilots. The simulator centre will be fully active by the middle of 2012.

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