



Helmet mounted display for safer helicopter flight

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Helicopter flights and landings in poor visibility conditions always present pilots with special challenges. The German Aerospace Center (Deutsches Zentrum für Luft- und Raumfahrt; DLR) has now completed a series of tests with a new helmet mounted display and has brought it into use a flight simulator. In future, this display will assist helicopter pilots with landings in exceptional conditions.

"The swirling clouds of dust or snow that are stirred up during landings on unpaved surfaces pose a substantial risk for emergency flights by mountain rescue teams or for missions in desert regions," explains Helmut Többen from the DLR Institute of Flight Guidance. "These can greatly reduce visibility, especially during the last 20 to 30 metres of the descent."

Display in helmet enhances safety

A solution intended to help pilots contend with difficult situations is now at hand in the form of a Helmet Mounted Display (HMD). Conventional flight instruments require pilots to constantly switch between looking outside the helicopter and checking the instrument panel; these two functions have been combined in the new display. With the help of the HMD, critical flight guidance information such as altitude, speed, course and attitude are displayed in the pilot's field of view, as is information about obstacles such as electricity pylons. Since it dispenses with the need for the pilot to keep changing focus between the relatively close display panel and the more distant world outside, the HMD also reduces eyestrain, which in turn increases safety.

Helmet in practical test

In a series of tests, helicopter pilots from the German Armed Forces, German Federal Police Force and ADAC, the German Automobile Association, flew a range of different test scenarios using the new helmet display in the cockpit simulator at the DLR Institute of Flight Guidance, after which they rated the results. These data are now being processed so that, by the mid-point of this year, real flight-testing can take place using DLR's BO105 and EC135 research helicopters.

The display was acquired with financial support from the German Federal Office of Defence Technology and Procurement (Bundesamt für Wehrtechnik und Beschaffung; BWB). Once testing is complete, this could be a potential solution for any flight operations carried out in conditions of poor visibility.

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Helmet mounted display in the cockpit simulator



A test candidate from the Germany Armed Forces during the first trial of the new helmet mounted display in the generic cockpit simulator at the DLR Institute of Flight Guidance.

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Helmet display in a helicopter



Initial ground tests with the new helmet mounted display in a research helicopter at DLR Braunschweig.

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