COMPUTER TRACTION MANAGEMENT SYSTEM IN THE MODE OF LANDING ON A SHORT RUNWAY

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Analysis of European airfields in small towns shows that today airfields with "short runways" are the largest group, and in the future their number will only increase due to: the desire to bring airfields to densely populated areas, as well as due to low , compared with the "elite" airfields, construction costs.

This trend is accompanied by the emergence of short take-off and landing aircraft SR, as well as the implementation of automated control systems (ACS) and such aircraft modern methods of landing control on "short runways".

Based on the analysis of the experience of developing such ACS, the following requirements for onboard short-landing systems can be determined: information support of the approach to landing on a steep glide path with a landing point located at the beginning of the runway, while implementing high-precision guidance to the point of contact; direct control of the thrust of the power plant, with the optimal combination of the action of the chassis brakes and reverse thrust at the stage of the run of the aircraft on the runway.

The first requirement is implemented through the channel of elevator, and the second is based on the computational traction control system (CTCS) of the power plant of aircraft and the chassis braking system.

In CTCS at the air stage of landing the coordinated control of flight speed and pitch angle is realized. In order to increase the accuracy of maintaining the trajectory of the aircraft during landing, an adaptive correction of the thrust control program is proposed through the additional use of information about the longitudinal overload of the aircraft. In the alignment, holding and tangency areas, the CTCS actuator shifts the sector to the Small Gas position, and the law of engine thrust control switches to direct control of the thrust of the power plant maintaining the set landing speed.

In the area of tangency CTCS generates a signal "Permission to reverse thrust" according to the usual logic of checking the specified conditions: the position of the aircraft relative to the runway, the value of the flight speed and altitude, the positioni of the flaps, landing gear, throttle sectors and the engine rotor speed.

At the stage of the run of the aircraft on the runway, algorithms for complex braking by reverse thrust and wheel brakes are proposed, taking into account the operation of anti-skidding automation.

References:

1. Rogozhin V.A., Sineglazov V.M., Filyashkin N.. Automated aircraft control systems: K .: NAU, 2003. - 502 p.

2. Inozemtsev A. A., Konyaev E. A., Medvedev V. V. and et al. Aircraft engine PS-90A M .: FIZMATLIT, 2007 .- 320 p.