

AIRBORNE SENSOR SYSTEMS

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ABSTRACT

In the present time the field of navigation is undergoing a revolutionary development. There are three major technology aspects that lead to this leap in performance of today's navigation systems:

- the introduction of satellite navigation (GPS/GLONASS)
- the development of a new generation of inertial sensors (e.g. sensors on the chip)
- the increased computer capabilities that allow complex real time calculations

Especially in airborne applications the new technologies will lead to systems that can achieve centimetre accuracy in all three dimensions, in all phases of flight at very low prices compared to today's avionics equipment.

The Institute for Flight Guidance from the Technical University of Braunschweig operates a twin engine research aircraft that is equipped with a satellite based navigation system. The paper will present the basic structure of this integrated navigation system and give examples of various applications of the system and show the achieved performance. Special emphasis will be given to the least results in long range differential (over 400km range) experiments and the possibilities to use GLONASS, the Russian counterpart to GPS. The Institute for Flight Guidance is also doing research on new, low cost inertial sensor packages that are based on gyro on the chip technology. By error modelling and inflight calibration techniques it is planned to significantly improve the performance of this sensor class. The test philosophy and first test results will be presented in the paper.

Groupes-capteurs aéroportés

Résumé

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