

# How Testing Contributed to the A380 Certification

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**Abstract:** A380 Certification, jointly granted by EASA and FAA on December 12th 2006 for the T900-RR version, has required intensive phases of testing, both on ground test means and in flight. Among the whole variety of tests, more than 15.000 hours of simulator tests and around 2.500 Flight hours have been necessary to achieve the final integration and demonstrate the technical compliance.

Significant technological steps on systems architecture, systems design and structural optimization have been introduced on A380, and this brought Airbus to increase the volume of validation and to make deeper integration testing on ground, starting well before the first flight. On structure side, after numerous tests to validate the use of new materials and design principles, complete static, fatigue and damage tolerance campaigns were run on full-scale test means.

As usual, specific rigs dedicated to fuel, slats and flaps, landing gears, air generation, flight controls and cabin systems have been used. In addition, multi-functional test means such as a cabin integration test rig, an "Iron bird" covering hydraulic / electrical generation and distribution (including flight controls), and three cockpits coupled to real avionics bays contributed to systems integration, human factor assessments and certification activities. Compared to previous Airbus programs, representativity of these various means have been improved, mainly by going deeper into the interfaces between Systems. On the flight test side, three test aircraft have been used to cover the development and certification campaign, including early passenger flights, airport compatibility demonstrations and reliability route proving with the Airworthiness Authorities.

Flight test installation was tailored to acquire the ever-growing data exchange between systems (network concept), multiplying by 10 the recording capacity compared to previous programs. Then, post-certification testing activities have been focused on customization and operability testing in an airline like context, to mature A380 maintainability before its entry into service.