FIRST AUTONOMOUS AIRCRAFT TEST IN BRAZIL BY EMBRAER AND UFES

News / Manufacturer

A scientific and technological cooperation between Embraer and the Universidade Federal do Espírito Santo (Ufes) made it possible for a prototype to perform the taxiing operation on its own, moving along a previously established path without human interference.

The sensor and image navigation set led the autonomous systems technology demonstration aircraft through the runway, taxi area and patio independently, without outside assistance. A pilot followed the cockpit operation in case of any interference. The test took place in the last week of August, at Embraer unit in Gavião Peixoto, in São Paulo state.

For the past six months, researchers from Embraer and Ufes have worked together on mathematical and computational models of automation, software development, hardware, laser sensor kit, GPS and cameras, as well as systems integration into the aeronautical platform. The autonomous land navigation system was tested in a simulator during preliminary assessments prior to actual operation.

“Our strategy for technology development in autonomous systems seeks to position the country at the forefront of artificial intelligence processes in a variety of applications”, said Daniel Moczydlower, Embraer's Executive Vice President of Engineering and Technology. “Achieving this technological milestone in Embraer's 50th anniversary month demonstrated not only the importance of bringing industry closer to the university, but also how prepared and engaged our people are for the journey of excellence needed for the coming decades.”

The integrated artificial intelligence system monitored the aircraft’s external and internal conditions, which acts independently on the acceleration, steering and braking commands, and accurately performed the movement along the indicated path. The test aircraft platform - the same one used for the development of the modern executive jets Legacy 500 and Praetor 600 - integrated features of the Intelligent Autonomous Robotic Automobile (IARA) system, result of an

autonomous cars' research that began in 2009, at the Ufes High Performance Computing Laboratory (LCAD).

"This success demonstrates the excellence of what we have been developing at Ufes in the last 10 years in the areas of autonomous vehicles and artificial intelligence. It puts us once again at the scientific forefront in these areas worldwide. Doing all this in partnership with Embraer fills us with pride and satisfaction", said Professor Alberto Ferreira de Souza, project coordinator.

The partnership with Ufes, in the context of pre-competitive research and development, seeks to accelerate the knowledge of autonomous systems technologies through the implementation of more agile experimentation processes.

The proposal for the scientific development of autonomous aeronautical systems, using a technology demonstration platform, constitutes an effective and efficient precompetitive research instrument for learning, training and maturing of technologies prior to application in future products or development of new market segments.

Initiatives such as this, combined with long-term incentive policies, can enhance, for example, Brazil's ability to enable a new era of air mobility that is more accessible to the population.

Embraer is committed to the open innovation model and collaborates with dozens of universities and research centers in Brazil and abroad. Highlights include long-term partnerships with institutions such as the Financier of Studies and Projects (Finep), the Research Support Foundations of the states of Santa Catarina, São Paulo and Minas Gerais (Fapesc, Fapesp and Fapemig, respectively) and Brazilian Company of Industrial Research and Innovation (Embrapii), which are fundamental to reduce the distance between the scientific community and the needs of the industry.

By establishing strategic partnerships through more agile cooperation mechanisms, Embraer stimulates knowledge networks that allow a significant increase in the country's competitiveness and the construction of a sustainable future.

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