



ACS
AVIATION

VE

ITAIPU
BRASILEIRO


Finep

PU-HZA

EXPERIMENTAL

SORA-3

ACS



A Flight To Make The History In Aviation

ITAIPU AND THE COMPANY ACS AVIATION, FROM SÃO JOSÉ DOS CAMPOS (SP), PUT IN THE AIR THE FIRST MANNED ELECTRIC AIRCRAFT OF LATIN AMERICA THE HISTORIC FLIGHT OPENS NEW PERSPECTIVES TO BRAZIL AND PARAGUAY IN THE AVIATION SECTOR.

Only five minutes. Long enough to put Brazil and Paraguay at the forefront of development of manned aircraft with electrical propulsion. This is how we can sum up the inaugural flight of Sora-e, the first manned electric aircraft in Latin America.

The aircraft was developed by Itaipu and the São Paulo company ACS Aviation, within the VE Program. Engineer Alexandre Zaramella, managing partner of ACS, was the pilot responsible for the historic flight, on the tarmac of the binational company's airport, on the Paraguayan side of the hydroelectric plant.

The Sora-e took off at exactly 2:28 pm (Brasília time) on June 23 and flew over the vicinity of the Itaipu reservoir. At 2:33 pm, it touched the runway again, exactly as predicted in the flight plan.

At the time of landing, the protection of the front landing gear broke. A little scare, but nothing that would alter the test result. The electric motor's performance was perfect. "In a short time we were able to achieve the complete development of the aircraft. And the flight was very good, quiet, as expected", celebrated the pilot.



Samek Exalts Unique Flight And The Pioneering Of Brazil

FOR ITAIPU DIRECTOR, THE FIRST MANNED ELECTRIC AIRCRAFT IN LATIN AMERICAN SHOWS THAT IT IS POSSIBLE TO MAKE DEVELOPMENT AND ENVIRONMENT COMPATIBLE. "WE ARE FEELING LIKE SANTOS DUMONT, WHEN HE FLEW THE 14 BIS."

The Brazilian general director of Itaipu, Jorge Samek, said the researches with the electric aircraft, developed by the VE Program, "shows that it is possible to reconcile development, employment generation, life on the planet and, at the same time, preserve the environment".

Samek related the inaugural flight of the Sora-e with a remarkable fact in the history of world aviation. "We are feeling like Santos Dumont, when he flew the 14 bis." [At the time] No one believed, but it was the first step to a great path. Therefore, this is a successful test showing the feasibility of the process" he assessed.

Itaipu's financial director, Margaret Groff, recalled that the company is already a reference in the area of sustainable electric mobility, with

electric cars, buses and trucks, and also in the development of intelligent energy storage systems and fleet monitoring. "It is now a reference in the aeronautical sector".

According to her, the aircraft is another step towards the development of electric prototypes. "It is an innovation even for Latin America. All this work is the basis for our research, especially in the development of components for the industry. Our goal is to strengthen the domestic industry in the area of mobility", said Margaret.

The Brazilian coordinator of the VE Program, Celso Novais, pointed out that Itaipu's interest in the project is to deepen the studies on composite materials used in the aeronautical sector, seen as key to reducing the weight of electric vehicles. The lower the weight, the greater the autonomy.

"Plane is a means of transport in which the weight is decisive. Therefore, this know-how will help us find solutions to improve the autonomy of our electric vehicles", he said. For ACS Aviation, one of the project goals is make commercial electric models viable and help promote this market, still in its embryonic stage.

The researches to develop the Sora-e began in 2012 through a partnership between Itaipu, ACS and Finep. The basis of the project was the acrobatic sports model ACS-100 SORA, with a combustion engine.



Sora-e is equipped with two Enrax thrusters, manufactured in Slovenia.



The Sora-e is equipped with two Enrax thrusters, of 35 kW each one, manufactured in Slovenia, and six packs of lithium-ion polymer batteries, totaling 400 volts. The model has an autonomy of 45 minutes, expandable to one hour and a half, with cruising speed of 190 km/h and top speed of 340 km/h.

The structure is made of carbon fiber and the propeller was manufactured in the United States, by the company Craig Catto, meeting the project's specifications. The aircraft is 8-meter wide (from one end of the wing to another) and total weight of

650 kilograms.

The first technical assessment flight occurred on May 18, in São José dos Campos. The model was certified by the National Civil Aviation Agency (ANAC) in the Research and Development category.

Alexandre Zaramella recalled that Itaipu and ACS started from scratch to develop the new technology. The engineer also highlighted the "torque curve", that is, the response of the aircraft to the pilot's power command. "That is the big difference", he said, comparing with the conventional model. "The electric plane is more at hand."



From left to right, Alexandre Zaramella, Jorge Samek, Margaret Groff and Celso Novais: official photo on the tarmac, next to the Sora-e.