

# FUEL CELL AIRCRAFT

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## INTRODUCTION

An aircraft introduced by the Boeing Company was powered by a hydrogen fuel cell and successfully completed a flight in Spain.



Figure 1. Hydrogen Fuel cell Aircraft designed by the Boeing Company Research And Technology (BRAT) division; formerly Phantom Works was first flown in Spain.

Source: Boeing.

Touting the potential that solid oxide fuel cells have for small aircraft, the Boeing Company is not considering them as the primary source of power for passenger planes. Its strategy for saving fuel on the commercial aircraft is to use carbon composite materials that bring down the overall weight such as in the Dreamliner Boeing 787 plane..

## DESIGN FEATURES

As the present time, the hydrogen fuel cell plane needs an extra boost from a lithium-ion battery to climb up to its cruising height. It then relied solely on a single Proton Exchange Membrane fuel cell to cruise for 20 minutes at a maintained speed.

The plane was developed at the Boeing's Phantom Works with a team of companies and universities from the UK, Austria, Germany, Spain and France over a five-year effort.

The outcome is a two-seat plane, adapted from a Dimona motorized glider. The Dimona is a lightweight airplane with a 53.5-ft. wingspan that reached 62 mph during a test cruise.

## **DISCUSSION**

The integration of fuel cells into aircraft could invigorate the Boeing Company into the Unmanned Aerial Vehicle (UAV) and small recreational airplane markets.

Along the effort of testing cheaper aircraft fuels, the Virgin Atlantic Company conducted a biofuel test of a Boeing 747. Small airplane owners are being squeezed by rising fuel costs and may be willing to pay more for an environmentally friendly aircraft.

In the small UAVs market a UAV called Pterosaur made a 78 miles flight powered only by a hydrogen fuel cell developed by Horizon Fuel Cell Technologies of Singapore.