

Elytron – Bringing Back the Convertiplane

By Ian Frain

Hayward, California is the San Francisco Bay area headquarters of Elytron Aircraft LLC, owned by Oliver Garrow and Gregory Bruell, who both have backgrounds in computer software design and engineering. Previously, Garrow Aircraft invented the innovative and unique Verticopter concept developing the design over a period of 10 years until the construction of the prototype. Garrow Aircraft created Elytron in 2013 for research into combining the advantages of fixed and rotary wing flight. The solution was to provide an aircraft that could perform any number of missions for Emergency Medical Service (EMS), public transportation, offshore and corporate operators, with an increase in safety, speed and simple operation as compared to current fixed and rotary wing aircraft.

One of the main features of the Elytron is the use of a box-wing configuration (something that Ludwig Prandtl had called the “best wing system” with a minimum induced drag). The design adds a pair of propellers which are mounted centrally on the tilt wing located in the central position and two pairs of fixed and joined wings. The joined wing concept in the design involves the splitting of the wings in the forward pair and an aft pair that are joined by winglets. One major advantage of splitting the wings and having an all-tilting center wing is that there is no interference with the thrust of the propellers, an issue seen typically in tiltrotors.

The first models were developed from 2008 onwards by the use of Computational Flow Dynamics (CFD) modeling and flight simulations. These early models still had limitations regarding aerodynamics. Elytron then turned this around with their physical prototype, further testing of which



Elytron Aircraft expects to fly its 2S technology demonstrator later this year. (Elytron)

will culminate in the production of the Elytron line of commercial aircraft.

South of San Francisco Bay is the Moffett Federal Airfield and NASA Ames Research Center, which has been synonymous with flight testing, including vertical flight aircraft since the 1950s. Elytron has used the Ames runways at Moffett Field to test successive UAV iterations, including the Elytron quarter-scale demonstration model. The flight testing activities carried out by Elytron include Conventional Take Off and Landing (CTOL), Vertical Take Off and Landing (VTOL) and Short Take Off and Vertical Landing (STOVL) of the unmanned

demonstrator, with a similar test program to be applied to the manned full-scale demonstrator.

The company has started off by actively designing and producing the “Elytron 2S” as a 2-seater technology demonstrator. This airframe will be powered by a 450 shp (335 kW) turbocharged engine intending to be test flown during 2015 with commercial production to follow thereafter.

In the immediate future, Elytron is looking to develop four and ten seat versions.

The four seat version is currently in development, powered by a 1075 shp (800 kW) engine and capable of speeds up to 275 kt (509 km/h) while the ten seat version is expected to fly at 360 kt (666 km/h)

About the Author

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The 4S is a four-seat model under development. The box wing/tilt wing should facilitate excellent STOL capabilities, in addition to vertical flight. (Elytron)