

EARTH OBSERVATION SYMPOSIUM (B1)
Interactive Presentations (IP)

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FLYWIN, A H₂-LIFTING GAS AIRSHIP DEMONSTRATOR

Abstract

With the support of the Walloon Research Agency, the private company FlyWin is currently working in Belgium on the development of a large unmanned (UAV) airship with a payload capability of at least 20 tons using hydrogen as a lifting gas.

Preliminary to the large final concept lifting a container of 20 tons, FlyWin and its research partners are currently designing and manufacturing a first demonstrator of 15 m long with a total volume a bit larger than 100 m³.

This demonstrator is using exactly the same technology and architecture as the large final airship: a UAV with hydrogen (H₂) as a lifting gas, a rigid structure based on a lightweight carbon composites structure, internal hydrogen gas bags made of extremely light and H₂-tight materials, a tail with a movable horizontal stabilizer and a movable rudder, electrically driven propellers used for propulsion and airship stability, high energy density batteries, an extra light external (double) skin, ... For example, the manufacturing of the H₂ gasbags is described and the different design choices are explained.

The airship demonstrator with all these technologies, related design rules and preliminary testing is described in the paper as well as the flight plan to be flown at the end of summer of 2017 in Belgium. The final airship mission is also shortly described, as well as its safety issues and EASA certification process.