

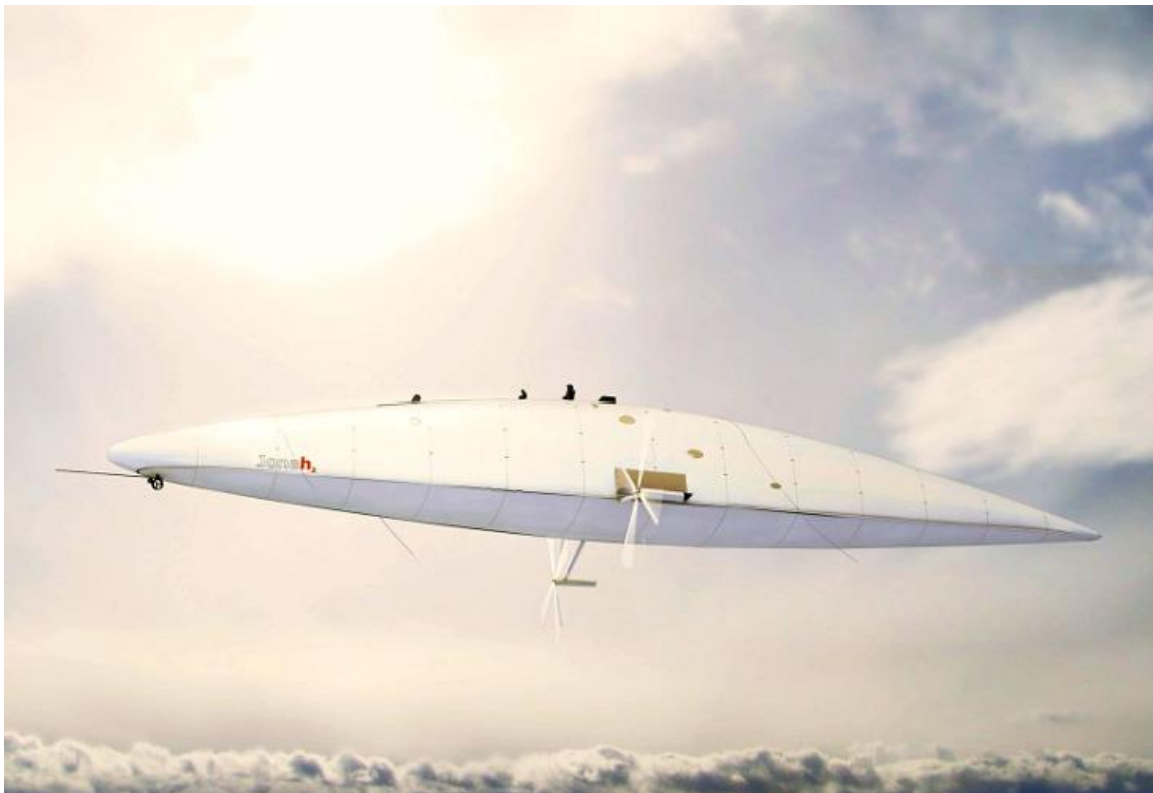
## Aeromodeller 2: hydrogen airship concept

Peter Lobner, 5 August 2019

This long, slender airship is a concept developed in 2011 by Belgian engineer Lieven Standaert for a zero-emissions airship that uses hydrogen for lift and fuel, and can generate hydrogen on-board using wind power so that it never needs to land. When the airship depletes its energy reserves (i.e., hydrogen available for producing power), the ship drops anchor and “rests” on its tether while it replenishes its hydrogen inventory. Standaert’s motivation for this project was to promote hydrogen as a clean fuel.

His Aeromodeller 2 website is here:

[http://aeromodeller2.hylas.be/?page\\_id=49](http://aeromodeller2.hylas.be/?page_id=49)

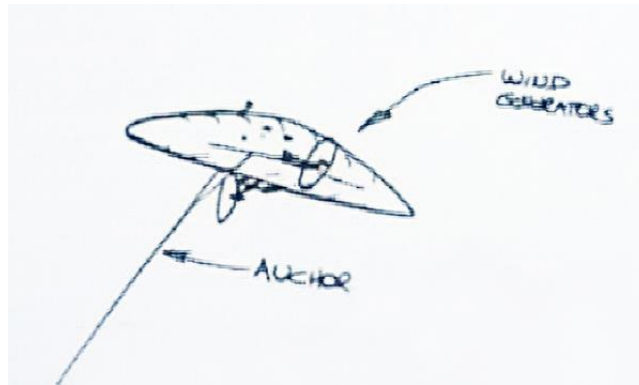


*Aeromodeller 2 in flight. Source: Inhabit.com*

Aeromodeller 2 isn't designed for speed; its maximum speed would be about 80 kph (50 mph). This vehicle is designed to be completely zero-emissions, relying entirely on renewable energy from hydrogen

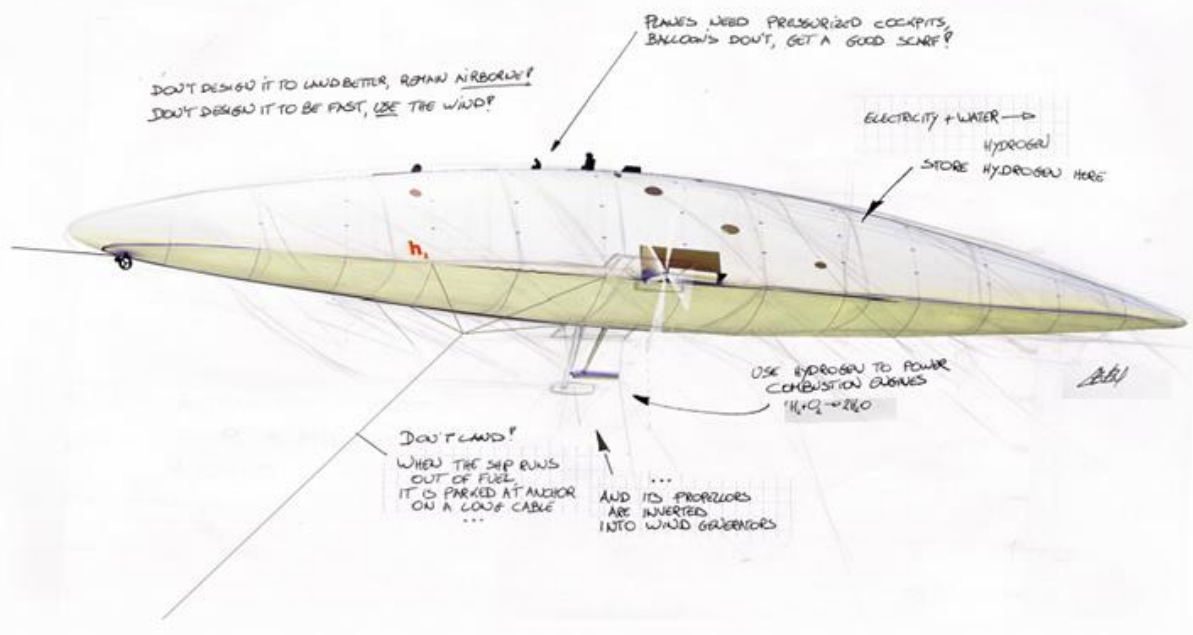
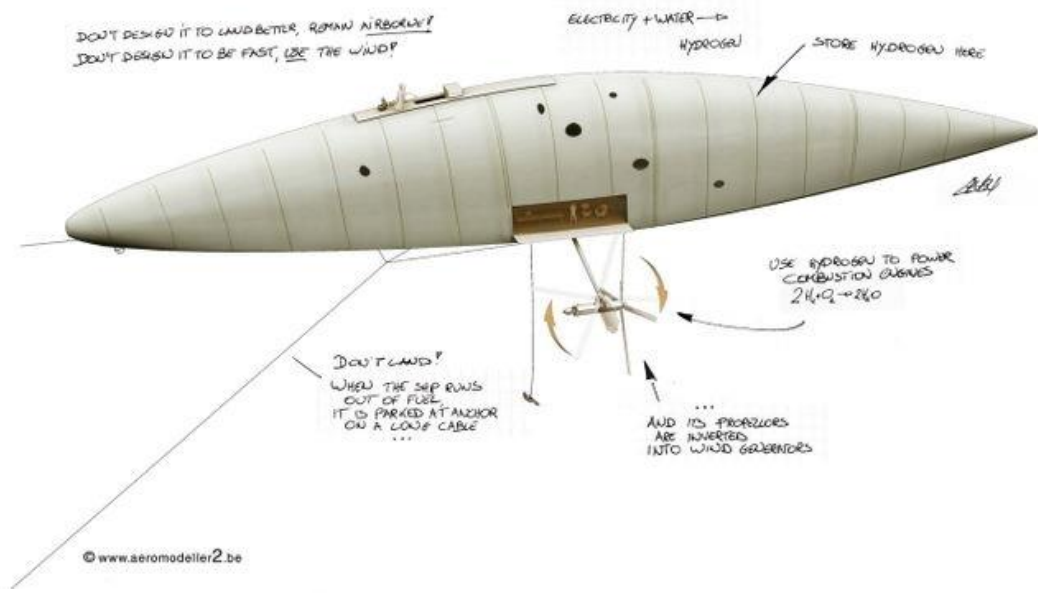
produced on-board from the electrolysis of ballast water, which can be replenished by rain. The hydrogen is used as the lifting gas and as fuel for two 70 kW (94 shp) hydrogen combustion engine-generators that supply the hybrid electric power system.

Propellers are driven by two motor-generators, which operate as electric motors for propulsion or, when the airship is tethered by a ground anchor, as wind-powered generators to produce electric power for hydrogen production and to recharge a battery. The airship needs to periodically “rest” to replenish its hydrogen inventory. Six hours of wind energy can accumulate enough fuel from electrolysis for one hour of flight.

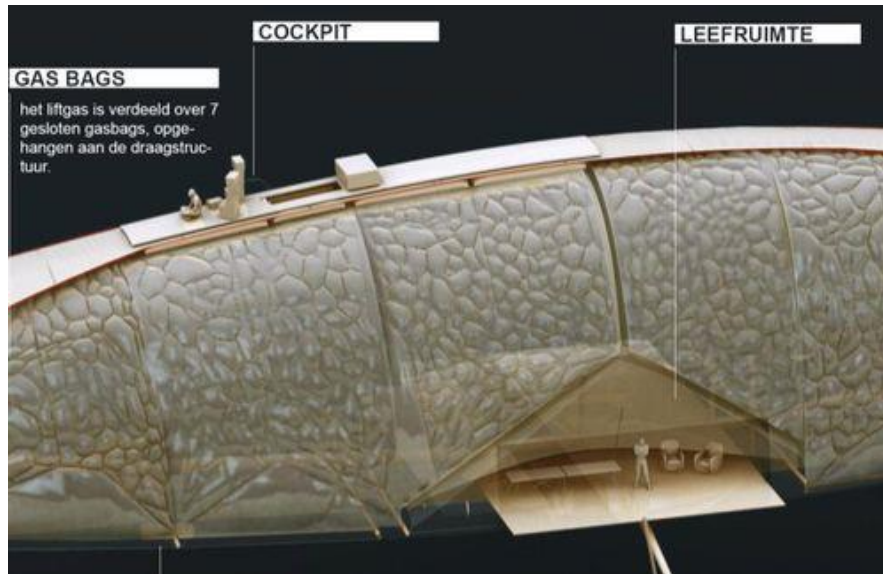


*Ground anchor enables propellers to function as wind turbines for power generation. Source: Inhabit.com*

Lower cost materials, like light thermoplastic foils, are proposed for the 85 meter (279 foot) aershell, instead of a woven, multi-layer fabric common in other airships. An articulated frame that runs along the bottom of the gas envelope supports the weight of the living quarters and the propulsion, electric power and electrolysis equipment.



Aeromodeller 2 shown tethered. Source: www.aeromodeller2.be



*Details of the cockpit, lifting gas bags and the living area and terrace. Source: [www.aeromodeller2.be](http://www.aeromodeller2.be)*



*1/10<sup>th</sup> sub-scale model of Aeromodeller 2. Source: [www.aeromodeller2.be](http://www.aeromodeller2.be)*

You'll can watch a short 2011 video of this Aeromodeller 2 model, showing the behavior of the articulated airframe, here:

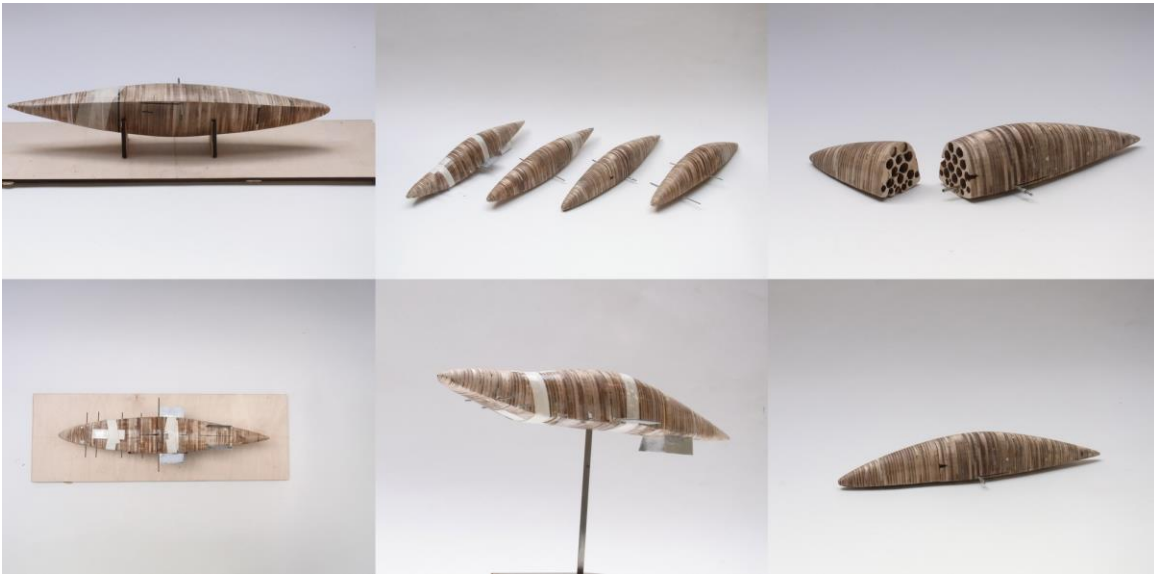
<https://www.youtube.com/watch?v=cBqebW1MIUo>

The following video of a 1/250<sup>th</sup> model shows more details on the articulation of the aershell: <http://aeromodeller2.hylas.be/?p=329>





*Standaert built a wind tunnel for testing Aeromodeller 2 shapes.  
Source: [www.aeromodeller2.be](http://www.aeromodeller2.be)*



Inhabit.com website at the following link was the source of some of the graphics in this section. <https://inhabitat.com/hydrogen-wind-powered-zeppelin-could-revolutionize-airship-transportation/aeromodeller-ii-5/>