

## Hydrogenase: bio-hydrogen airship / building concept

Peter Lobner, 5 August 2019

Designed by Vincent Callebaut Architectures, Paris (<http://vincent.callebaut.org>) in 2010, Hydrogenase is radical concept for a variable buoyancy, inhabited vertical airship / building that can dock with a base or fly independently using bio-generated hydrogen as the lift gas. The designer refers to Hydrogenase as, “the 100% self-sufficient organic airship of the future.” The bio-hydrogen is generated from algae farming to recycle carbon dioxide.

Basic design features are as follows:

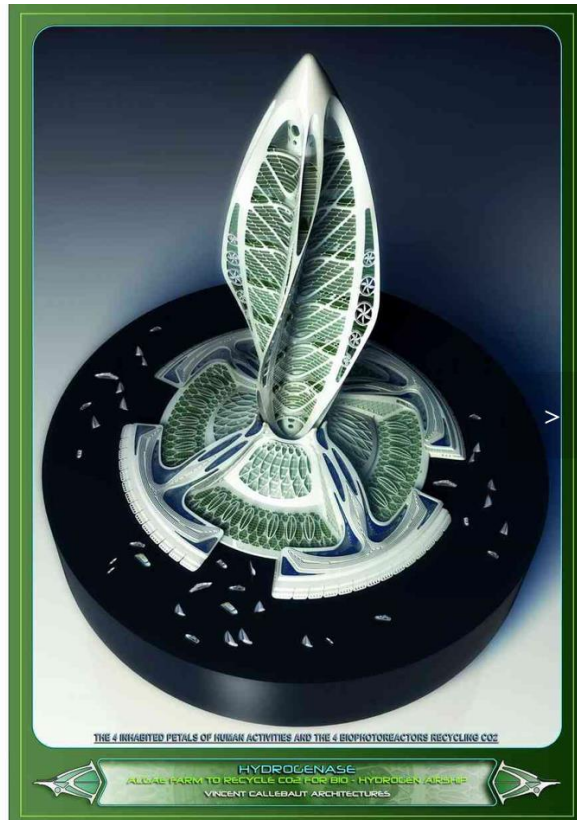
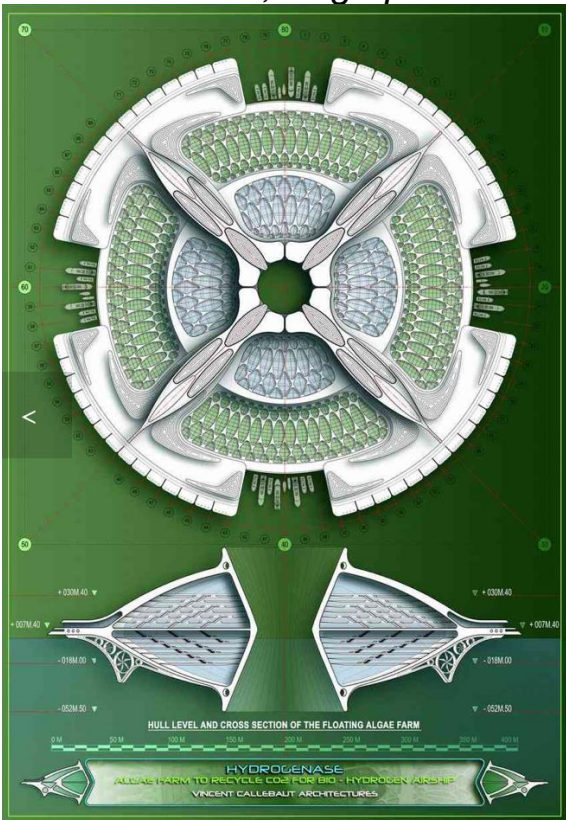
- Semi-rigid structure
- Dimensions: more than 400 meters (1,312 ft) tall, 180 meters (591 ft) in diameter.
- Four great arch structures support the interior circular platforms and distribute vertically all the levels of the inhabited central rings.
- Inhabited spaces are included between four great volumes inflated with bio-hydrogen lifting gas.
- Zero carbon emissions.
- Flight altitude: 2,000 meters (6,562 ft)
- Maximum cargo load: 200 metric tons (220 short tons)
- Maximum speed: 175 kph (109 mph)
- Range: 5,000 to 10,000 km (3,107 to 6,214 miles)

You'll find a through dissertation on the Hydrogenase concept and associated algae farming and bio-hydrogen production on the Vincent Callebaut Architectures, Paris website here:

[http://vincent.callebaut.org/object/100505\\_hydrogenase/hydrogenase/projects](http://vincent.callebaut.org/object/100505_hydrogenase/hydrogenase/projects)



Hydrogenase airships shown in their base, launching and in flight.  
 Source, all graphics: Vincent Callebaut Architectures





*Hydrogenase structural design.  
Source: Vincent Callebaut Architectures*