

Leoni Design Workshop (LDWO) – Air Cube hybrid sky yacht

Peter Lobner, 3 November 2024

1. Introduction



In 2023, Jacopo Leoni and his team at the Italian firm Leoni Design Workshop (LDWO) developed a design concept for the [Cube Houseboat](#) that incorporated a modernist red cubic house module on an aluminum catamaran boat platform.



Cube Houseboat. Source: LDWO (2023)

Fast forward to 2024, and a similar cubic house module reappears as a large, external “gondola” on the [Air Cube hybrid airship](#) sky yacht design concept developed by Leoni and his team at Design4Future (a division of LDWO).



Air Cube hybrid airship sky yacht. Source: LDWO (2024)



The relationship between the Cube Houseboat and the Air Cube sky yacht is evident in this rendering. Source: Design4Future via designboom (2024)

LDWO reports: “Inspired by the innovative Cube Houseboat, Air Cube is a hybrid airship designed to offer a truly unique and unforgettable journey.”

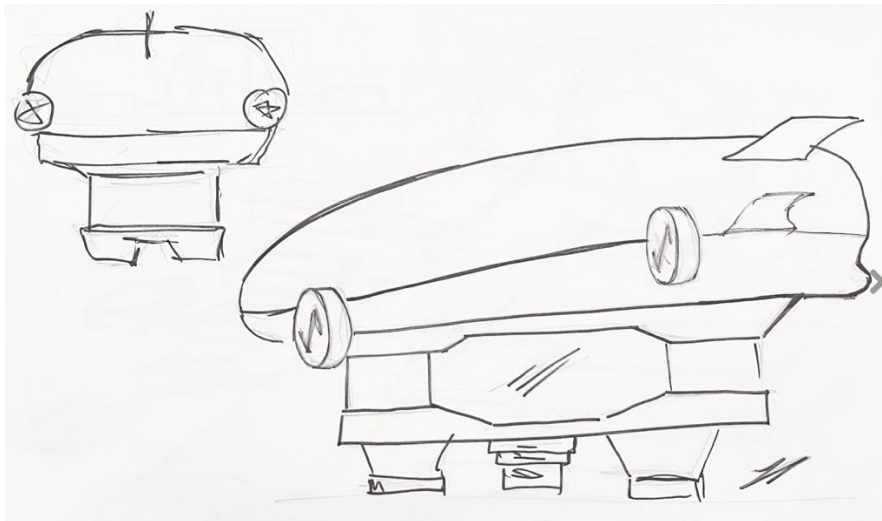
- A Luxurious Sky Yacht: “Air Cube is more than just an aircraft; it’s a luxurious sky yacht. Picture a private cabin complete with a dining area, spacious lounge, and all the modern amenities you’d expect from a high-end travel experience. With its sleek design and panoramic views, Air Cube offers an unparalleled level of comfort and sophistication.”

- A Blend of Innovation and Tradition: “Drawing inspiration from the Cube Houseboat, Air Cube combines the best of both worlds: the stability and efficiency of a traditional airship with the agility and speed of a modern aircraft. This hybrid design allows for a smoother and more enjoyable flight experience, while also minimizing environmental impact.”

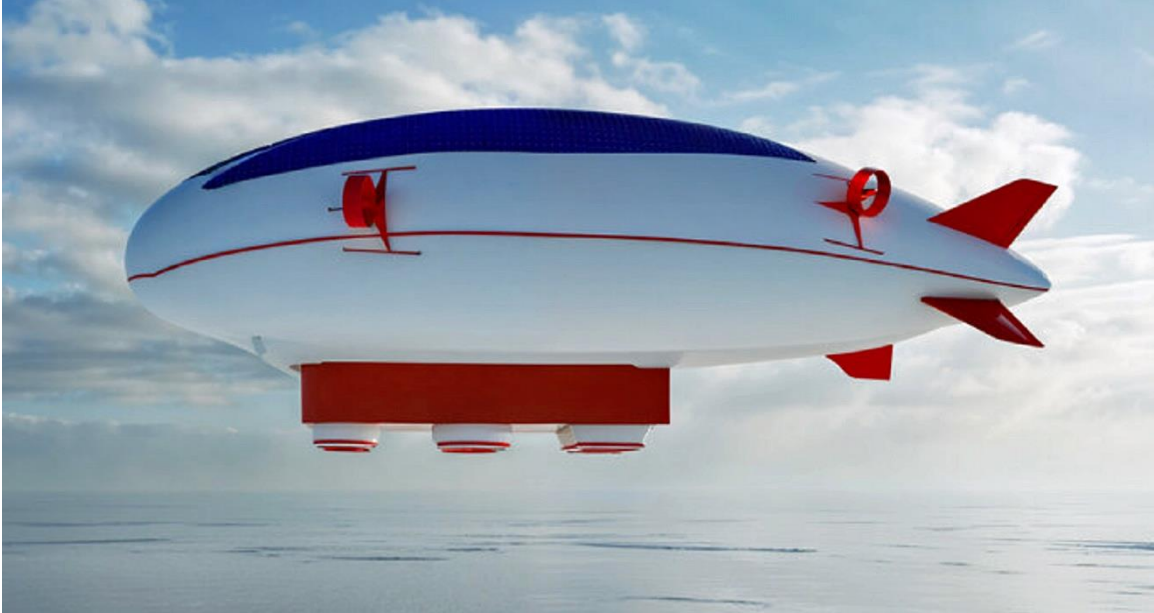
Air Cube targets the luxury travel market with a vehicle than can be configured for a range of unique travel experiences, including adventure and relaxing travel experiences that are not available by other means.

2. Air Cube design features

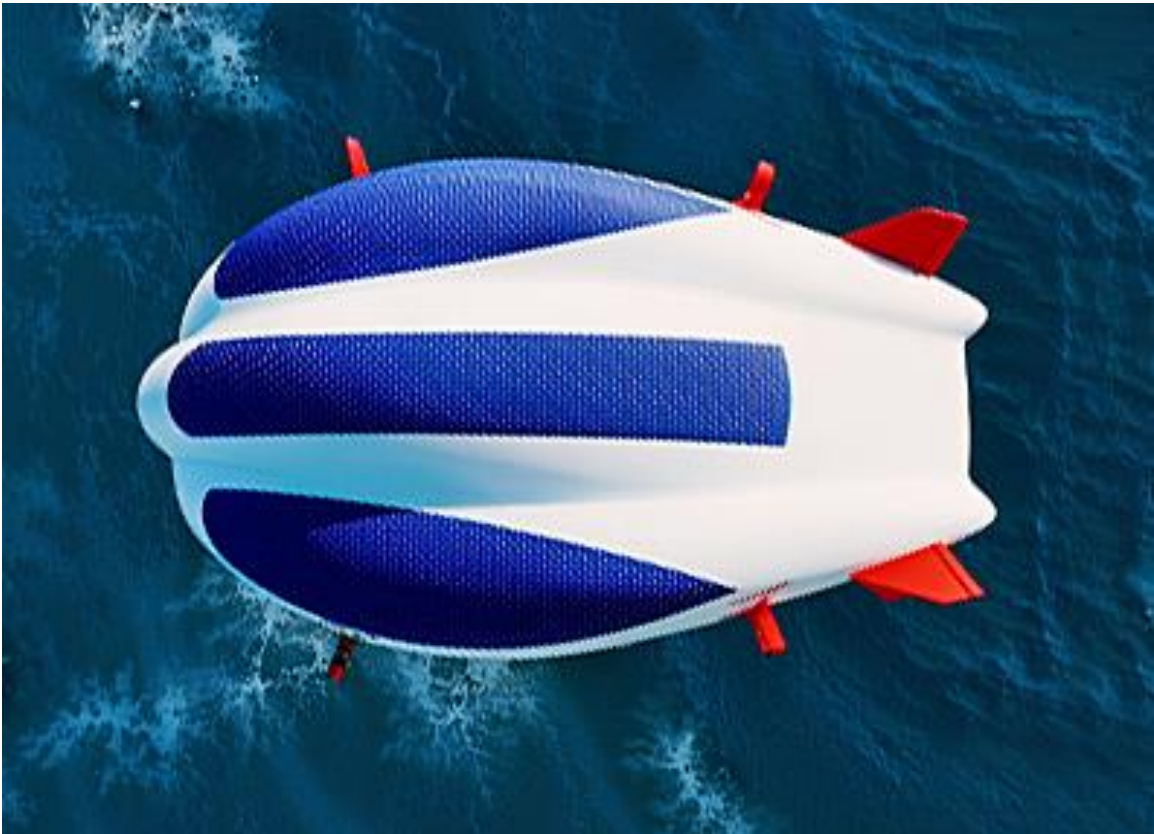
The Air Cube is a rather ungainly combination of two major elements. The first is a large, conventional-looking, aerodynamic hybrid airship with a non-rigid, pressure-stabilized gas envelope with four attached thrust-vectoring, shrouded propulsors and X-configured tail fins. The second element is a large, underslung, un-aerodynamic, rectangular gondola that accommodates the passengers and crew and appears to sit upon an Air Cushion Landing System (ACLS) with six pads.



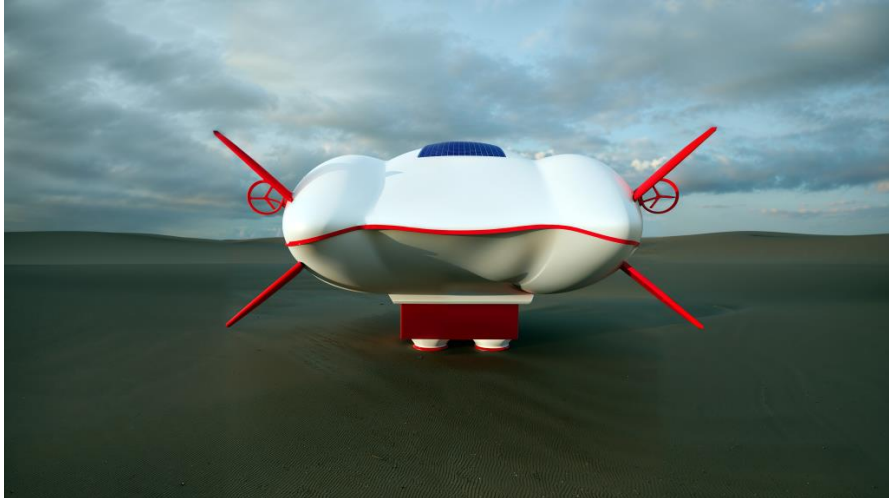
Sketch of the Air Cube design concept showing basic features, including the propulsor placement, underslung living quarters and the Air Cushion Landing System (ACLS) incorporated in the more refined final concept design. Source: LDWO (2024)



Side view of an Air Cube in flight, showing the ACLS pads under the rectangular passenger accommodations.



*Overhead view in flight showing the solar arrays on the top of the hull.
Source, both graphics: LDWO (2024)*



Stern view on the ground, showing the X-tail configuration.



Stern view from ground level.



Stern quarter view showing the interface between the hybrid airship and the "Red Box" module containing the Sky Yacht's passenger accommodations. Source, three graphics: LDWO.

As a hybrid airship, the Air Cube is heavier than air, and appears to be designed for short takeoff and landing (STOL) operations. The ACLS pads would allow the airship to taxi on an air cushion while on the ground and to take off and land on a variety of surfaces.



Bow quarter view of an Air Cube on the ground, sitting on its ACLS pads.



*Stern quarter view of an Air Cube flying above water.
Source, both graphics: LDWO (2024)*



Stern propulsor on the Air Cube. The mounting to the non-rigid gas envelope distributes propulsion loads (deadweight & dynamic) over a broad area on the flank of the gas envelope. This design is quite similar to the propulsor mountings on the Lockheed Martin LMH-1 and the AT² Z-1 hybrid airship designs.



Rendering of an Air Cube touring a scenic area at low altitude.

Source, three graphics: LDWO (2024)

LDWO has not released graphics showing the interior design of the passenger accommodations, which are said to include a private cabin, dining area, spacious lounge, and all the modern amenities of a luxury yacht.

Watch LDWO's [Air Cube web page](#) for further developments.

3. For more information

- Matthew Burgos, “Red glass house built on top of aluminum catamaran makes up the floating ‘Cube Houseboat’,” designboom, 16 November 2023: <https://www.designboom.com/technology/cube-houseboat-glass-house-aluminum-catamaran-leoni-design-workshop-11-16-2023/>
- Matthew Burgos, “Meet Air Cube, a hybrid airship and sky yacht that can take off after sailing on water,” designboom, 2 November 2024: <https://www.designboom.com/technology/air-cube-hybrid-airship-sky-yacht-11-02-2024/>

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 - Aeros – Neona sky yacht
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 - Lazzarini Design Studio - Air Yacht
 - Lazzarini Design Studio – Colossea mega-yacht & Norge 2.0 companion airship