Hybrid Air Vehicles (HAV) Airlander 10 & 50 airships

Peter Lobner, 17 August 2019

The Airlander 10 airship

The Airlander 10 prototype airship is the commercial reincarnation of the HAV-304 LEMV airship with minor modifications to improve its performance, including larger upper fins with leading edge extensions and shorter side strakes.

Airlander 10 prototype first flight:
Source: https://www.ainonline.com/aviation-news/

Airlander 10 prototype currently is the world’s largest aircraft, measuring 302 feet (92 m) long and 143 feet (43.5 m) wide at its wingtips. Maximum speed is 80 kts (148 kph); maximum altitude is 16,000 feet (4,880 m). The gas envelope volume was 1,340,000 cubic feet (38,000 cubic meters). The Airlander 10 prototype is expected to be able to carry a 3 metric ton (3,000 kg, 6,612 lb) payload to 10 - 14,000 feet (3,048 – 4,267 meters) on a five day mission.
Airlander 10 prototype first flight. Source: CNNMoney.

Closeup view of Airlander 10 prototype in 2016 showing the side-mounted vectored-thrust propellers and one of the landing skids. Source: Philbobagshot / Wikipedia
Airlander 10 made its first two flights on 25 August 2016 from Cardington Airfield in Bedfordshire, UK. While the first flight went well, the second ended with an inauspicious soft crash landing with some damage to the airship, but no injuries to the crew.

![Airlander 10 prototype soft crash landing after second flight.](https://www.aerosociety.com/news/expanding-the-envelope/)

Source: Sky News

You'll find a Royal Aeronautical Society report on the first half of the Airlander 10 testing program, “Expanding the Envelope,” at the following link:


This report indicates that the all-weather capability of the Airlander 10, including anti-icing, would be tested in the second half of the test program. The report also suggests that the commercial Airlander 10 may have an enhanced thrust vectoring system that will enable a (limited) VTOL capability.
In November 2017, the Airlander 10 prototype apparently broke free from it’s mooring at Cardington Airfield, triggering a safety feature that deflated the gas envelope.

The deflated Airlander 10 prototype at Cardington Airfield.

In June 2018, the Airlander 10 prototype was moved from Cardington Airfield to a new production facility in the Bedford area.

Airlander 10 gondola being transported from Cardington Airfield.
The British Broadcasting Corporation (BBC) reported on 13 January 2019, the HAV had retired the £32 million ($42 m USD) Airlander 10 prototype following successful final testing and achievement of key certification milestones with European civil aviation authorities.

- Design Organization Approval from the European Aviation Safety Agency (EASA) was received in October 2018
- Production Organization Approval from the Civil Aviation Authority (CAA) also has been received

HAV reported that, “the prototype served its purpose as the world’s first full-sized hybrid aircraft, providing us with the data we needed to move forward from prototype to production standard……. The full commercial model is expected to take to the skies with its first paying passengers in the early 2020s.” After introduction of the commercial model, Airlander’s current goal is to produce ten Airlander 10 airships a year for about four years and then transition to production of the larger Airlander 50.

Rendering of a production Airlander 10. Source: HAV
Customized Airlander 10

Design Q: The UK firm Design Q has developed an interior concept for the Airlander 10 that tailors the airship for “luxury expeditionary tourism.” The passenger accommodations are described as follows:

“Passengers on Airlander will have luxurious private en-suite bedrooms and will be able to enjoy horizon-to-horizon views in the aircraft’s extensive Infinity Lounge. The Altitude Bar will offer drinks with the ultimate view, while 18 guests can enjoy fine dining in the skies. Airlander 10’s interior is unusually spacious – the (46m long) cabin is larger than most single-aisle aircraft, such as the A320. This space allowed the team at Design Q to use their extensive experience of luxury spaces to create something full of unique features that will set new standards for excellence in air travel.”

The following Design Q graphics will give you an idea of what is possible in a airship that could be certified for commercial operations in the next couple of years (early 2020s).
You can take a short video tour of the Design Q interior concept for this customized Airlander 10 here: 
https://www.youtube.com/watch?v=hGTEVW1efYM

You’ll find more information and the same video tour on the Design Q website here: 
https://www.designq.co.uk/airlander-10

**Vesper Rising:** In 2017, the firm Vesper Rising announced plans to use an Airlander 10 for tourist flights in Las Vegas, NV and over the Grand Canyon. The general configuration of their planned day-tourist version of the Airlander 10, including views of the proposed interior are shown in the following graphics from the Vesper Rising website here: https://vesperrising.com/about-us

Vesper Rising is seeking capital for this venture and likely has not placed a firm order for an Airlander 10.

*Rendering of the Vesper Rising Airlander 10 configured for day tours. Source: Vesper Rising*
The Airlander 50 airship

A larger version known as Airlander 50 is being designed with internal cargo bays capable of carrying payloads of up to 132,300 pounds (60,000 kg). The Airlander 50 design includes an air cushion landing system (ACLS), which replaces the inflatable landing skids used on the Airlander 10 prototype.
Airlander 50 concept drawing. Source: hybridairvehicles.com

Airlander 50 general arrangement. Note the air cushion landing system. Source: hybridairvehicles.com

More information on Airlander airships is available on the Hybrid Air Vehicles website at the following link:

https://www.hybridairvehicles.com/about-us