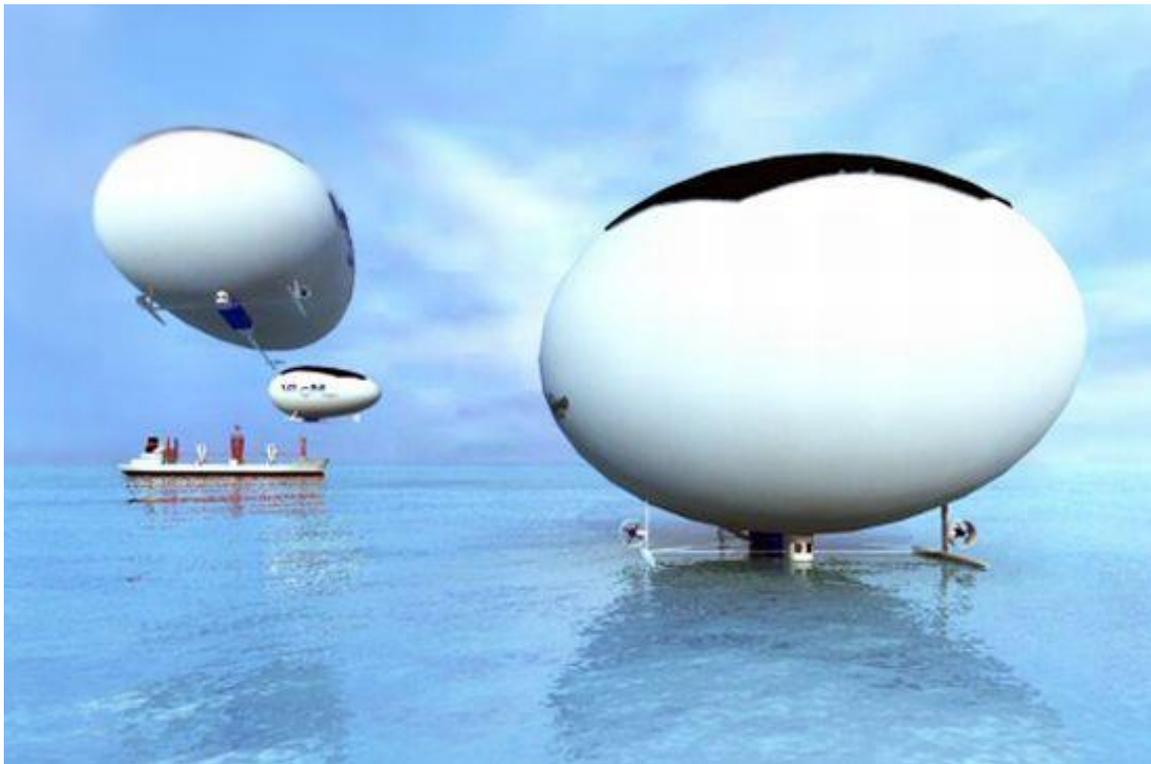


SolarAirShip's High-Speed Solar Airship (HSSA)

Peter Lobner, Updated 9 September 2021

1. Introduction

The High Speed Solar Airship (HSSA), also known as the model C60, was a 2010 concept by the firm SolarAirShip (later renamed Helios Airships) for a cost-effective means to haul cargo in an airship using off-the-shelf components and a large solar array on the hull to generate electric power for propulsion and airship systems. High-speed flight was possible by operating the airship at high altitude (30,000 feet / 9,144 meters), where thinner air enabled higher airspeed and the jet stream could boost speed on west-to-east routes to about 182 mph (293 kph) during the day and about 165 mph (266 kph) at night when propulsion power was reduced. At its high operating altitude, the HSSA would be flying above most of the bad weather, minimizing enroute shipment delays.



Source: Inhabit (2010)

2. HSSA (C60) design

The semi-rigid HSSA airship had a length of 320 feet (97.5 m) with a helium gas envelope volume of 2 million ft³ (56,633 m³). The airship was designed to carry 60 tons (54.4 metric tons) of cargo. Load exchange was to be accomplished with water ballast.

The HSSA was electrically-powered by 24,000 ft² (2,230 m²) of thin-film solar cells in an integrated array on the top of the gas envelope, generating 62.7 kW at sea level. At an altitude of 30,000 ft (9,144 m), the solar cells were expected to generate about 30% more power (about 81.5 kW) due to the greater intensity of sunlight and colder temperatures at higher altitudes.

A production airship was estimated to cost \$5 million in 2010. No full-scale prototype was developed.



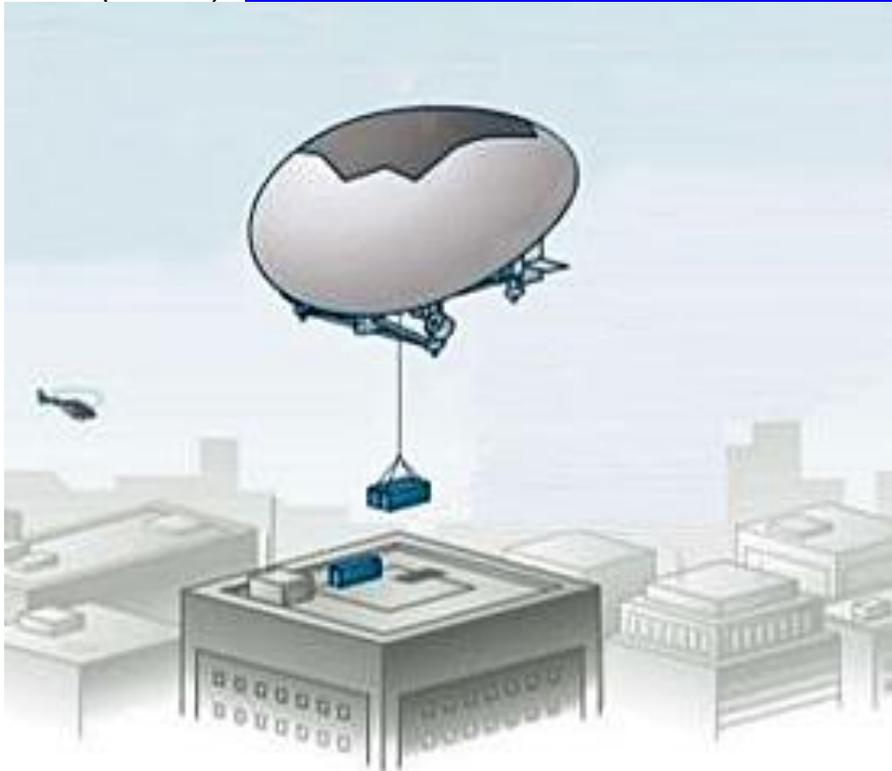
HSSA (C60) bow quarter view. Source: Inhabit (2010)



*HSSAs (C60s) flying over scenic destinations.
Source, both renderings: <https://www.facebook.com/HeliosAirships/>*



*HSSA (C60) making a point-to-point delivery to a roof-top.
Source (above): <https://www.facebook.com/HeliosAirships/>*



Source : Innovate – Age of the Airship



Source: <https://www.facebook.com/HeliosAirships/>

3. Subscale concept demonstrator

SolarAirShip did limited flight testing with a 1:20 scale HSSA model.



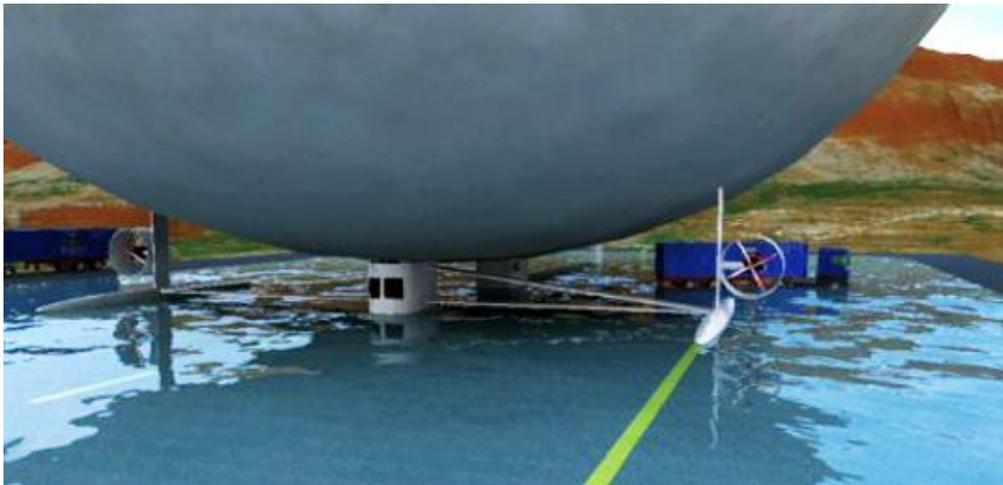
Source: *Inhabit* (2010)



*Carrying a scale model cargo container
Source, both photos: Inhabit (2010)*



*View from beneath the 1:20 scale HSSA model
with cargo container.*



*Demonstrating a water landing
Source, both photos: Inhabit (2010)*

4. For more information

- Yuka Yoneda, “Solar-Powered Airship Could Offer Emissions-Free Cargo Hauling,” Inhabit, 13 April 2010: <https://inhabitat.com/solar-powered-airship-could-offer-emissions-free-cargo-hauling/solarairship-ed07>
- “High Flying Demand of Bust,” Air Cargo World, pp. 34 – 39, July 2011: <https://aircargoworld.com/wp-content/uploads/2016/03/AirCargoWorld2011-07.pdf>
- “High Speed Solar Airship HSSA,” Naval Airship Association, Noon Balloon, #93, p. 24, Spring 2012: https://650a8e8c-0be3-466b-9728-1ece39a725e3.filesusr.com/ugd/fbd712_8cb63fdac49947709daed3bf979c1ea2.pdf