

ATG / HAV - AT-10 blimp

Peter Lobner, 24 August 2021

1. Introduction

The UK firm Advanced Technologies Group (ATG) is best known for two advanced airship projects:

- A hybrid, heavy lift airship known as the Sky Catamaran, or “SkyCat” for short, started in about 1999.
- A stratospheric High Altitude Platform (HAP) named “StratSat,” for delivering communications and surveillance services from geo-stationary positions in the stratosphere, started in 2001.

Both advanced projects led to the development and flight testing of sub-scale prototype airships and advanced designs for full-scale airships. ATG also developed the design for the pilot-optional Condor high altitude surveillance airship derived from the SkyCat and they offered a range of conventional, nonrigid blimps, including:

- **AT-10:** Small blimp for advertising, surveillance and pilot training applications. Envelope volume 88,287 ft³ (2,500 m³)
- **AT-12:** Mid-size, multi-mission blimp, with an envelope volume similar to an Airship Industries Skyship 600 @ 235,400 ft³ (6,666 m³) and 2 x 350 shp (261 kW) Centurion diesel engines.
- **AT-04:** Large, multi-mission, 50-seat blimp with an envelope volume of 501,468 ft³ (14,200 m³)

These blimps incorporated some design features from the US Navy’s Sentinel 1000 blimp, which was designed by Roger Munk and his team from Airship Industries before ATG was formed. ATG only built one AT-10 blimp before the firm went into administration in 2005. ATG’s hybrid airship and blimp businesses were acquired first by SkyCat Group in 2006 and then in 2007 by Hybrid Air Vehicles (HAV), which currently holds the design rights for the AT-10.

This article provides an overview of the original ATG AT-10 and a new version that reportedly was being developed by HAV.

2. The original ATG AT-10

The original AT-10 was a sophisticated small blimp with a length of 135.8 ft (41.4 m), a maximum diameter of 35.1 ft (10.7 m) and an envelope volume of 88,287 ft³ (2,500 m³). The AT-10 had the following features:

- Laminated translucent fabric hull with an external catenary collar system for supporting the gondola and distributing loads into the envelope
- Single ballonnet above the gondola
- Gondola comprised of a single structural module
- Cockpit with two pilot stations with side stick controls
- Passenger compartment for up to four passengers
- “Fly-by-light” optical flight control system
- Pneumatic actuators
- 2 x aero diesel engines rated @ 100 shp (74.6 kW) each. This was the first use of diesel engines on an airship
- 2 x vectoring ducted fan propulsors supported from the gondola
- X-tail

The AT-10 made its first flight at Cardington on 22 March 2002. During flight testing thru early 2004, it demonstrated effective controls with excellent stability and low speed handling.



*AT-10 flying over the Cardington Hangars, 25 March 2004.
Source: Trevor Monk / Airship Heritage Trust*



AT-10 in flight. Note the exterior catenary collar and suspension system for the gondola.



*AT-10 flying at Cardington, 31 March 2004.
Note the shadow of the single ballonnet on the envelope.
Source, both photos: Trevor Monk / Airship Heritage Trust*

European type certification by EASA (European Union Aviation Safety Agency) was in progress in 2004. However, difficulties in certifying the first diesel engine ever used on an airship delayed the certification process. ATG ran out of funds and European certification was not completed. The owner of the AT-10 packed up the airship and took it to China.



*The AT-10 at Cardington during EASA certification, circa 2004.
Source: Hybrid Pilot Services, Ltd.*

3. The “new” HAV AT-10

In an undated article, likely circa 2012, Hybrid Pilot Services Ltd., reported that Hybrid Air Vehicles (HAV) was developing a new, slightly larger “Mk. 2” version of the AT-10 for use as a training airship for pilots who will fly the much larger hybrid airships that HAV was developing.

Use as a training platform would take advantage of the original AT-10's demonstrated good stability and control characteristics. In the training role, the AT-10 Mk. 2 would have a small flight simulation computer integrated with the digital flight controls and engine throttle controls to simulate in flight the control response and momentum of a much larger hybrid airship. Bow thrusters would be fitted to the AT-10 Mk. 2 to improve the fidelity of the flight simulation and reduce the ground crew requirements. The use of the AT-10 Mk. 2 as a training platform for the large HAV hybrid airships would be approved by the UK Civil Aviation Authority (CAA).

The Hybrid Pilot Services Ltd. article reported that the US Coast Guard and Navy expressed interest in the AT-10 Mk. 2 as a patrol airship for detecting drug smugglers in the Caribbean. On patrol and surveillance missions, the AT-10 Mk. 2 has accommodations for two pilots (or pilot and trainee) and two equipment operators for surveillance with electro-optical / FLIR (forward-looking infra-red) systems that would be mounted in the passenger compartment. The cabin can be configured for up to four passengers.

Hybrid Pilot Services reported Ltd. that the AT-10 Mk. 2 would be powered by an already certified aero diesel engine. Two candidates were identified: the 4-cylinder, turbocharged Centurion 2.0 diesel rated at 155 shp (115.6 kW) and the 4-cylinder, turbocharged Austro Engine E4 (aka AE 300) diesel rated at 170 shp (127 kW). The diesel engines would give this new airship an endurance of about 30 hours and a range of about 1,000 nm (1,852 km).

HAV expects their first production Airlander 10 to be flying by 2024. There has been no recent word on HAV developing the AT-10 Mk. 2 training airship or any other training airship.

4. For more information

- “AT-10,” Airship Heritage Trust: https://www.airshipsonline.com/airships/AT_10/Index.htm
- “B08 - Airship Flight Test Development at ATG Cardington,” The Airship Association: <http://www.airship-association.org/cms/node/193>

- “The new AT10 from Hybrid Air Vehicles Ltd.,” Hybrid Pilot Services Ltd., circa 2012:
<https://www.hybridpilotservices.com/new-at10.html>
- “Centurion Aero Engines,” Experimental Aircraft Information:
<https://www.experimentalaircraft.info/homebuilt-aircraft/aircraft-engines-centurion.php>
- “AE300 Technical Data,” Austro Engine:
https://austroengine.at/uploads/pdf/mod_products1/AE300_Technical_Data_Sheet.pdf

Videos:

- “AT-10 Airship Takeoff - Without Thrust Vectoring,” (0:20 minutes), 23 April 2011:
<https://www.youtube.com/watch?v=jpoFdHERAbQ>
- “AT-10 airship – Thrust vectoring,” (0:20 minutes), 23 April 2011: <https://www.youtube.com/watch?v=EyxR0Kldh9k>
- “AT-10 airship on an early test flight, landing at Cardington, then being brought onto her mast” (6:37 minutes), 2 August 2011: <https://www.youtube.com/watch?v=rt9kz5aykUM>

Related *Modern Airship* articles

- Advanced Technologies Group (ATG) – SkyCat
- Hybrid Air Vehicles (HAV) - Airlander 10 & 50 airships