

Galaxy Unmanned Systems LLC blimp drones

Peter Lobner, 3 April 2021

1. Introduction

Galaxy Unmanned Systems LLC (GUS) is a Fort Worth, TX-based company founded by brothers Tony and Jason White. Galaxy offers a wide range of services related to unmanned aerial systems, including concept, design, manufacturing, certification, testing, payload configuration, sub-system integration, documentation, training and operations. The company more than 40 years of industry experience with remote controlled and autonomous systems. Their current airship products are the non-rigid GC-35 Unmanned Tactical Airship System (UTAS) and the GC-75 Large Unmanned Tactical Airship System (LUTAS).

Galaxy identified the following key operational capabilities of their blimps: vertical takeoff and landing (VTOL), high visibility while in the air, capable of carrying heavy payloads safely and efficiently, and small operational footprint.

The Galaxy blimps can be used for a wide range of commercial applications, including aerial broadcasting and advertising, utility inspections (i.e., powerline, pipeline, rail, oil and gas facilities), agriculture surveys, air sampling, forestry and wildlife management, search and rescue, and scientific research.



The GC-35 (left) and the GC-75 (right). Source: GUS

The Galaxy Unmanned Systems website is here:
<https://galaxyuas.com>

Their Facebook page is here: <https://www.facebook.com/gusllc/>

2. GC-35 UTAS – Galaxy 35ft Unmanned Tactical Airship System

The GC-35 UTAS is a small blimp that is designed to be operated out of a standard 35 ft bumper-pull hitch trailer and can be easily deployed by a crew of two. Systems are built to customer specifications and are highly customizable.



The flight-ready GC-35 is transportable in a trailer. Source: GUS

GC-35 basic design and performance parameters are as follows:



- Length: 35 ft (10.7 m)
- Diameter: 8 ft (2.4 m)
- Envelope: Rip-stop coated nylon
- Payload capacity: 15 lbs (6.8 kg)
- Engine options: gasoline engine with or w/o generator, electric, or solar hybrid
- Propulsion: 2 x ducted fans attached to the gondola
- Speed: 0 (hover) to 30 – 40 mph (26 – 35 knots, max)
- Operating altitude: 200 – 500 ft (61 – 152 m, typical), 3,000 ft (914 m, max)
- Range: 1 mile (1.6 km) limited by manual radio controls, or more than 25 miles (40 km) when operating as an autonomous system
- Endurance: depends on propulsion; can be 8 hours or more

GC-35.
Source, all
three
photos:
GUS

3. GC-60 prototype

The GC-60 was a 60-foot prototype video broadcast platform that made history in February 2008 in Phoenix, AZ, where it became the first unmanned airship to provide aerial video for a live broadcast. The GC-60 was featured as the flying video platform for a National Hot Rod Association (NHRA) Powersports race that was broadcast on ESPN. For this event the GC-60 was flying a Cineflex broadcast quality gimbaled camera. It demonstrated its ability to deliver reliable video coverage in windy conditions and stay on station in gusts of 30+ knots during the event.



GC-60 prototype, sponsored by GEICO. Source: GUS



GC-60 view of February 2008 NHRA Phoenix event. Source: GUS

4. GC-75 LUTAS – Galaxy 75ft Large Unmanned Tactical Airship System

The GC-75 LUTAS is the current large airship production model. It is a scaled-up version of the GC-60 prototype.



GC-75. Note mobile mooring mast, above. Source, both photos: GUS





Cineflex gimbale camera mount and gondola with thrust-vectoring propellers in the horizontal cruise position. Source: GUS



GC-75 propellers vectored "up" for vertical takeoff. Source: GUS

With its 12,100 ft³ (343 m³) coated nylon gas envelop, the 75-foot (23-meter) long GC-75 can carry a 200 lb (91 kg) payload. Like the GC-60, it can fly in 30 mph (26 knots) winds with gusts up to 40 mph (35 knots).

Unlike the GC-35, the GC-75 is deflated, packed and moved to its next assignment. GUS has developed a helium recovery system so they can capture the helium from the airship when they deflate it rather than just venting it to the atmosphere.

In October 2019, GUS was selected to receive a US Army Small Business Innovation Research (SBIR) contract for the “enhancement and augmentation of current aerostat capabilities that provide low-cost, persistent intelligence, surveillance and reconnaissance during high-intensity conflicts.” The deliverable will be a variation of a hybrid aerostat/airship that can operate autonomously.

5. For more information

- Mike Clark, “Galaxy Blimps flying a Cineflex in 2008,” Dkydio, 18 April 2012: <https://www.suasnews.com/2012/04/galaxy-airships-flying-a-cineflex-in-2008/>
- Nicholas Sakelaris, “Galaxy Unmanned Systems Chosen for Research Contract with the Army,” Dallas Innovates, 17 October 2019: <https://dallasinnovates.com/galaxy-unmanned-systems-chosen-for-research-contract-with-the-army/>

6. Videos

- “GC-35 Unmanned Tactical Airship System (UTAS)” (5:30 minutes), Galaxy Unmanned Systems LLC, 22 March 2019: <https://www.youtube.com/watch?v=KbceK46SOhw>
- “GC-75 Flight Characteristics” (2:07 min), Galaxy Unmanned Systems LLC, 30 Mar 2019: https://www.youtube.com/watch?list=TLGGd61U4QHdVxAxMjAyMjAyMQ&v=QokxSBLTvA8&feature=emb_logo