

Small Tactical Multi-Payload Aerostat System (STMPAS)

Mission Worldwide military operations require low cost, responsive, and mobile systems to elevate electronic payloads to a few thousand feet. Needed are persistent 24/7 EO/IR Surveillance, Networked Communications Relays and Signal Intelligence collection to dispersed forces without using scarce satellite bandwidth. Forward deployed units need this support with lower air transport, logistics and manpower requirements than aircraft or UAS, but with more coverage and fewer blind spots than towers.

Aerostats are an efficient means for persistent altitude coverage but traditional aerostats are large and their ground equipment has very limited mobility and lengthy set-up times, limiting their use. Carolina Unmanned Vehicles (CUV) developed the **Small Tactical Multi-Payload Aerostat System (STMPAS)** to remove these limitations, creating a mobile cost effective tactical aerostat system. The Army Rapid Equipping Force deployed an early STMPAS version to Afghanistan to provide ISR capability for small tactical units.

Operational Benefits STMPAS consists of three major subsystems: The Helikite, Carrier, and Payloads. Taken together these comprise a system far smaller and more versatile than any comparable unit (Fig. 1). STMPAS uses a specially designed tethered blimp, called a Helikite that combines helium and wind lift so even very small sizes operate easily in high wind, allowing it to be a fraction of the cost and manpower of traditional lighter-than-air designs. With all equipment, including winch, helium system, and generator, carried by a single HMMWV trailer Carrier, STMPAS is operated by a two person crew. Unique designs to reduce the need for ground crews to handle the blimp during launch and recovery.

STMPAS is suitable for surveillance, communications relay, and intelligence collection for military, border control and law enforcement. Compared to towers, UAS and aircraft, STMPAS has significant operational advantages for mobile surveillance and communications relay. It covers a far larger area than tower based cameras, and has reduced blind spots due to obstacles in the field of view. Operating and maintenance cost is a fraction of the cost of using aircraft or UAS to lift surveillance or relay payloads.

Status The newest STMPAS, with the Helikite launched directly from the trailer, has improved launch timeline, reduced problems with muddy / rocky ground, and allows movement with the Helikite inflated. An air inflated unit on the trailer top restrains and protects to the Helikite during inflation / deflation and movement, providing a safe working area for the two person crew, protecting them from falling. Winches are available for tethers up to 10,000 feet and can be equipped with electrical slip rings and fiber optic rotary joints for power / data tethers. The new STMPAS retains the small crew size, high mobility, air transportability and logistics supportability of the original.

CUV is a small Woman-Owned company in Raleigh, NC, focused on small aerostats and Unmanned Aerial Vehicles. Contact: Mike Rogers, (919) 851-9898, merogers@carolinaunmanned.com

Fig 1

Carrier Design

HMMWV Compatible Trailer
 Helirest On Carrier Protects Equipment And Personnel
 Electric Winches To Elevate Payloads up to 10,000 Feet
 Mil-Std or Rugged Commercial Diesel Generators
 Quick Inflation Helium Manifold
 Racks Up to 15 Helium Tanks, (One Inflation and Several Weeks of "Top-off")
 C-130 Roll On – Roll Off Capable

STMPAS Carrier



Resupply

Reinflation Tanks Less Than One HMMWV Trailer Load
 Fuel Consumption Less Than 15 Gallons JP-8 Per Month

Minimum Logistics

Trailer Carries Everything For Deployment, No Separate Helium Trailer
 Weather Covers and Locking Storage For All Equipment
 Automotive Spares (Tires, Brakes, Lights) In Military Supply System
 Uses Standard Helium Tanks With Government NSN
 Two Cross-trained Mechanical and Electrical Techs Operate Entire System Including Payloads