The Effects of Various Adaptations to PEGASUS-I, an Unmanned Drone Carrier

Lax, Nathan
Hirsch, Michael

As of late, drones have become a huge topic of interest at a commercial level but one aspect has yet to be challenged, improving the air time. To combat this, the PEGASUS 1 (Portative Energy Generating Aerial Supporting Unmanned System) was designed. This system uses a helium balloon to keep the PEGASUS payload aloft while drones are able to attach and recharge on the underside. This experiment will provide more insight into methods and engineering techniques that can be used to support PEGASUS 1 by creating the most efficient drone carrying system. The engineering concepts of the exterior design, internal docking systems, and drone charging methods of the PEGASUS 1 system design were tested and it was concluded that the sphere shape was the best exterior design. The servo lock method (using a mobile clamp inside the guiding cone to latch onto the drone from inside PEGASUS 1) proved to have the greatest result for docking when considering how well it connected and stayed connected after impact, and the solar charge proved to be a less effective method than standard charging. It was concluded that the final design would include a disk shape, and a servo lock and solar panel charger which proves the most efficient for the design. These components could be combined to form a commercial drone docking system. The concepts of a battery replacement system, hot air balloon or buoyancy system, and the protection of drone docking using a wind shield can be further examined.