Conceptual Design of Low Altitude Unmanned Small Hybrid Airship

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***Abstract*— In the last two decades, popularity of Unmanned Air Systems (UAS) are at their peaks. Their capacities and abilities are advancing day by day in parallel with development of science and technology. They are doing almost everything what conventional aircrafts are doing except passenger transfer, for now. Despite an UAS can be controlled from thousands of miles away, they are still limited in range and endurance because of their energy storage capacities. Most of the energy sources of an aircraft is used against to gravitational force. However, Lighter Than Air(LTA) gases like helium, hydrogen etc. provides an option to aircrafts using lifting capacity of these gases and combination of lifting capacity of LTA gases and mechanical forces produced by engines allows engineers to create hybrid airships. Hybrid Airships gains flight altitude by using static lifting force of lighter than air gases in addition of the mechanical force which is produced by the propulsion system of the vehicle. Engines makes necessary maneuver with direction units to control the airship in all directions. Static lift from the LTA gases provide additional payload capacity to vehicle without consuming energy. Therefore, unlike the conventional aircrafts, hybrid airship has more flight duration than the others and more payload capacity. Aim of this work is, developing a low-cost small hybrid airship by using static lift force of the lighter than air gases and present to advantages of hybrid aircrafts.**

***Keywords*—Unmanned Air Vehicle (UAV), Lighter Than Air (LTA), Hybrid, Helium, Airship**

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