RUS-4

Design and Manufacturing of a Mini-UAV Quad-Copter Carrier

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The use of quad-copters has grown and expanded widely because of their mobility and the easy to build and control. However it suffers from the short range and the low speed which limits its wider use as it does not exceed a town limits. The idea is to design a mini UAV that could carry a quad-copter and transport it to far distance by high speed then release it to perform its own mission as a mother plane and a minion plane.
The project concerns mainly with the design of the mother plane and the release mechanism. In time being it does not interfere with the quad mission or control. The auto-pilot flies the UAV and directs it to its destination which increases the possible range and accuracy. During the design, another goal has put in consideration that the UAV can carry other useful payloads like mini robots or packages as a secondary mission. Also the UAV can be modified for reconnaissance to reach multi-role UAV, which will increase the reliability and reduce the need for much planes.
The final design results a UAV with 1.9 m span, 1.23 m length, 7.51 kg mass, 5 km range, 144 km/h velocity, 20 minutes loiter time and the ability to carry payloads up to 2.5 kg. The fuselage has simple and flexible design to accept various modifications for various missions.