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2012 research highlights

Alternative unmanned air vehicles

Modular airplane for educational purposes

Since unmanned vehicles do not need a conventional fuselage, many flight configurations are possible. Besides, active control even allows more combinations.
The airplane designed and developed in the laboratory can be mounted in the flight field in a vast number of shapes and configurations. Just by attaching a variety of modules to each other and with the help of configuration software to assess the aerodynamic feasibility and other centring and stability considerations, different airplanes can be immediately obtained and flied. This is especially useful for heterogeneous missions or educational purposes.

Hybrid helicopter-airplane unmanned vehicle

HADA is a hybrid vehicle that takes off as a helicopter and flies as an airplane. The UAV retract the rotor blades and spread the wings when the velocity is high enough. The engineering around the mission specification is critical, given the impact on the aircraft design and final performance. The strategy to run the transition between both modes of operation, as well as the propulsion requirements to carry it out, is part of the current research.

Unmanned blimp

With their ability to hover for days and to hold more payloads than many drones, aerostats and airships become good choices for surveillance in multiple scenarios.
Looking for these advantages, low-cost unmanned aerostatic platforms have been developed focused on fire monitoring and security applications. Two blimps have been studied, designed, built and operated. They are currently available with payload capacities from 10 to 100 kg and a helium volume of 300 and 660 m^3 respectively. The onboard autopilot allows a high degree of autonomy.
Development tasks were completed and they are available for researchers and other operational users to validate payloads, improve performances and serve commercial applications.

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