



Aerosonde Launch and Recovery Summary:

A major design requirement for Aerosonde launch and recovery is that the system be able to accommodate operations from a wide variety of sites, including airports, fields, sandy beaches and roads. It is also required that the launch and recovery system be easily transportable.

Launch of the Aerosonde UAV can be affected either via a rooftop car launch system, or via a rail launch system.

Roof Top Cradle Launch

The Aerosonde is launched from a launch system consisting of a roof rack that can be fitted to any full-size car. The base of the rack is fixed to the car and the upper section is connected to the base at the front, enabling free rotation in a vertical plane aligned with the direction of travel. Initially the aircraft lies tail down in the cradle.

As the car accelerates, the aircraft assumes a flight attitude, then at the rotation, or takeoff speed of approximately 45 knots, the aircraft lifts up, the cradle constraining straps are automatically released, and the aircraft is launched. Any suitably smooth, straight surface can be used such as tarmac, gravel or prepared grass. A total run of approximately 600' is required for vehicle acceleration, launch and deceleration.



Aerosonde UAV rotating out of the rooftop cradle on launch



Rail Launch

For the rail launch option the aircraft is loaded onto a catapult type launch system and aligned into wind. Upon launch initiation the aircraft is accelerated along the rail to reach flying speed as it departs the end of the rail.



Aerosonde rail launcher



Recovery

The UAV is recovered via a belly landing. A landing strip of approximately 300' in length is required for recovery.



An Aerosonde air vehicle just before touchdown

The engine is cut prior to landing and the propeller stops in a horizontal position, thus preventing a prop strike with the runway.

During launch and recovery operations, command and control of the UAV is established via a UHF radio link. A mobile ground control station inside a Dodge Sprinter van (or similar) is used to conduct launch and recovery operations. The command vehicle is generally parked alongside the runway in use or, in the case of the rail launcher, behind and outside the launcher's hazard area.

Launch and landing sequences, including climb out and approach, can be flown manually, or automatically. During manual flight an external pilot controls the aircraft's flight (via a remote-control style console connected to the ground control station). The manual-autopilot transition occurs at 500' AGL. For landing under autopilot a high precision differential GPS system and/or an AGL sensor (such as a laser altimeter) are used for centerline and glide slope tracking. During climb out and approach the aircraft flies a standard circuit, with legs approximately 0.5 miles x 0.3 miles in length.