Preliminary Design of a Micro Aerial Vehicle

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UAV Scientific Meeting & Exhibition of the Saudi Society for Aerospace Sciences,
Paper No. SSAS-2006-056
Jeddah, Saudi Arabia (June 6, 2006)

Abstract

This paper describes the preliminary design of a micro aerial vehicle. The plane is assumed to have about 25 cm maximum linear dimension and flies at an altitude of 100 m to reach a target 1 km away from the launch point. The mission is to monitor and collect information from the target point. The work starts from a project brief that describes the customer needs. A baseline design which satisfies these needs is obtained and refined using trade-off-studies. Parametric studies are then carried out in which several baseline designs are obtained by repeating the sizing process for altered values of the design parameters. An optimization study based on aircraft viability, or measures of customer satisfaction, is then carried out. The sizing process is repeated for the optimized aircraft whose performance and stability parameters are finally calculated and assessed.

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