

Project I Description

Project Name: Solar Autonomous Aircraft

Team Size: 2 MEE Students

Project Overview

Development of Unmanned Air Vehicle (UAV's) has been pretty attractive over these years because of its multi-domain application such as the military applications (spying, special operation surveillance) and numerous civil aviation, including aerial surveying of crops, acrobatic aerial footage in filmmaking, search and rescue operations, inspecting power lines and pipelines, counting wildlife, etc..

The objective of this current project is to optimize and improve the current design of the unmanned solar powered aircraft so that the plane is able to fly continuously for several hours. To achieve these goals, the aerodynamics of the aircraft has to ensure maximum efficiency and the structure has to be optimized to for minimal weight. In addition, the solar cells must be properly embedded in the wings and structure of the aircraft as well as appropriate amount of batteries has to be optimized.

Another objective of this proposed project is to perform an autonomous flight for several hours following a predefined path on utilizing appropriate software.

Project Areas and Majors

Aerodynamics / Structural Mechanics (1 MEE Student)

Instrumentations (1 MEE Student)

Project Deliverables

- Test the existing prototype
- Optimize the aerodynamic and structural design to achieve maximum flight time
- Build an Autonomous system, starting with cursing using a GPS sensor on a pre-set trajectory, and later auto-takeoff and landing of the aircraft
- Live streaming of data (battery, coordinates, speed, etc..) and images from the plane connected to a ground station
- Testing of the prototype to determine the actual maximum continuous flight