

IPRO 317: VTOL Aircraft for the Masses

Fall 2006

Objectives

The goal of IPRO 317 is to introduce a concept Vertical Take Off and Landing (VTOL) vehicle to the market that can compete directly with the automobile industry. This semester the team continued to work with the construction and testing of prototype models, alongside researching and designing a full scale prototype vehicle.

Tasks

In order to achieve the team goals this semester, the team divided into three subgroups with varying responsibilities:

- Current Model: This group continued work with the existing model, focusing on tuning the engine for performance and preparing for untethered test flight.
- New Prototype: This team took the work begun last semester in the construction of a new electric prototype, aiming to complete the procurement of parts and make headway in the assembly of the model.
- Full Scale Prototype: The final team looked to materials left by past instances of the IPRO as well as developments made by the other two teams to begin design work and identify parts for use in an initial manned prototype design.

Accomplishments

Each team worked diligently throughout the semester to further the goal of the IPRO as a whole, overcoming recurring obstacles as well as new unique challenges.

- ❖ Current Model: The team set forth an ambitious schedule and made great progress in boosting the structural safety of the model. However, timing problems pushed back the completion of engine tuning. This only allowed for a tethered test flight, which unfortunately resulted in the breaking of several gears.
- ❖ New Prototype: Continuing from the progress made last semester, the new model team continued designing assemblies for linking the two engines to the rotors. Also, the team researched the availability of additional required parts, compiling a list of sources and prices. Drawings for machined parts were also produced.
- ❖ Full Scale Prototype: The team worked with software models left by previous semesters to verify the intended performance of the vehicle. From these models, a simple Ultra-Light style design was created, and suitable components available on today's market were identified.

Future Work

The IPRO will continue working with the current model to achieve free flight, while finishing construction on the new model which will hopefully provide a more reliable means for testing and evaluation. As a whole, the team will take the knowledge gained from these models and apply it to the developing prototype. The most important matters to be addressed include the completion of the second model, as well as more detailed structural analysis of the full scale prototype design.

The IPRO 317 Team

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