Scaling of the U13A Remote Controlled Helicopter

Progress Check

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Overview

- Project Description
- Need and Goal
- Objectives
- Ordering Parts
- 3D Printing
- Group Breakdown
- Cost Analysis
- Summary
- References

Problem Description

- Client is Dr. Kosaraju
- Task of scaling U13A remote controlled helicopter by 1.5
- Capability to have mission specific attachments



Need and Goal

Need:

The U13A is to protect from forest fires. Goal:

Successfully upscale a remote controlled helicopter with the ability to add mission specific accessories.

Objectives

Objectives	Measurement Basis	Units
Design and build a RC helicopter	Amount of materials	Dollars
Attachments	Camera parts	Dollars
Batteries	Two sets of batteries	Dollars
Carrying Capabilities	Weight	lbs
Waterproof Materials	Cost for materials	Dollars
Lift Capabilities	Height range	Meters

List of Ordered Parts

- Spoke to Juana Blum about ordering our parts
- Parts Ordered
 - Outer shaft, inner shaft, main motor, tail motor, charger, battery, gears, camera, LED's.

Rapid Prototyping

- 3D printing allows for easily reproducible custom blades.
- Material: Ultem 9085
 - Can handle necessary stresses
 - Great impact resistance

Parts to be 3D Printed



Parts to be 3D Printed Continued

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Group Breakdown

Project Analyzer

– Abdul Aldulaimi

Computer Aid Designer

– Jacob Ruechel

- Electrical Components
 - Matthew Finch, David Cosio
- 3D Printing

– Randy Van Dusen, Travis Cole

Cost Analysis

Quantit	y Pa	nrt	Name	Price Per Part	Price
2	Main 250 Motors	Hobbymate HB2622-5000kv Brushless Motor	\$	24.80 \$	49.60
1	Tail Rotor	12000KV Brushless Tail Motor for Micro Heli	\$	14.99 \$	14.99
2	Main Rotor ESC	New HobbyWing Flyfun ESC 30A	\$	17.49 \$	34.98
1	Tail ESC	New HobbyWing Flyfun ESC 10A	\$	11.99 \$	11.99
6	Batteries	HYPERION G3 EX 1600 MAH 2S 7.4V 45C/90C LIPOLY PACK	\$	25.95 \$	155.7
1	Top Shaft	HP Heli's Inner Main Shaft for the X-2 helicopter	\$	10.99 \$	10.99
1	Lower Shaft	HP Heli's Outer Main Shaft w/Gear for the X-2 helicopter	\$	10.99 \$	10.99
1	Transmiter-Reciver	Fly Sky CT6B OEM Version Exceed RC 6-Ch 2.4Ghz Transmitter w/ Receiver	\$	44.70 \$	44.70
2	Small Gears	Mod 0.5, 10 Tooth, 2.3 mm ID Pinion	\$	1.99 \$	3.98
2	Large Gears	Mod 0.5, 80 Tooth, 6 mm ID Gear	\$	2.00 \$	4.00
1	Screws	LPPM3006 - M3 x 6mm - Thread forming screws For Plastic (100)	\$	2.40 \$	2.40
10	Pins	M2 - 8mm Roll Pins	\$	0.11 \$	1.10
1	Camera	Wholesale - New mini Wireless Spy Camera Hidden cam Security kit	Ś	30.43 \$	30.43
1	3D Printer Material	ABS Polymer for Rapid Prototyping	\$	500.00 \$	500.00
Total		, , , , , , , , , , , , , , , , , , , ,	•	\$	848.89

Cost Analysis Continued

- Added 3 additional batteries to parts list
- Biggest expense is polymer material but is being paid for by student fees
- This material will be used for almost every structural material in helicopter
- Electronic components are second most expensive

Gantt Chart

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Summary

- Our task is to upscale a U13A helicopter by 1.5.
- The need is that we have a helicopter that can maneuver over forest fires and our goal is to upscale the helicopter by 1.5.
- Stated what our objectives were.
- Ordered most of the parts needed for upscaled helicopter.

Summary Continued

- Rapid prototyping was chosen based on the material selection.
- Updated what parts were going to be used in 3D printing.
- Performed a cost analysis on the number of parts to order.
- Split our group into three sections.
- Gave an update on where our team is currently at and provided an updated project plan.

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Questions?