

P-51 MUSTANG Personal CAD Project

Introduction

After long thought and research into what I wanted to create for my personal CAD project, I choose to create an airplane based off of the WWII fighter the P-51 Mustang. This was a particular interest of mine personally because I am very interested in the machines the armed forces used in WWII because they are not complex or computer controlled. I think that it is interesting to learn how these planes worked and how they are put together.

QUALITY R/C
HYPERION
PRODUCTS
Easy to Fly!
"Gentle Slow-Speed Behavior, yet very fast with high-pitch propeller such as APC 10x10 E"

P-51D MUSTANG
Unlimited Racer "Miss America" Edition
Beautifully Detailed Fiberglass Fuselage, Cowl, and Air Scoop.
Pre-Painted Clear Canopy

Length: 1052mm (41.4")
Wingspan: 1206mm (47.5")
Wing Area: 25.6dm² (397 sq inch)
Flying Weight: 1.45~1.65kg (3.2~3.6lbs)
* Motor: Hyperion 3025-08
* ESC: HP-TITAN-50 POW, PSB, or PSW
* Battery: 3200~4350mAh 3S 16C+
SERVOS: 5 (2 aileron, 1 retract, 1 elevator, 1 rudder)
* Items suggested for best performance
Retracts can be locked down for 4-servo operation

"Excellent Ground Handling"

Easy to See!
"High-contrast covering color scheme for easy orientation"

"The Hyperion Mustangs are the most expensive models in the 25e warbird class and, even so, the best value by far."

"Stable and predictable enough for any intermediate pilot, yet capable of a tremendous performance range!"

APC 10x7 propeller not included

"The Radial "back mount" Motor Mounting System is Vibration Free"

98% Completed Beautiful, Scale, Wood and Fiberglass ARF Model

Easy to Build!
"Almost EVERYTHING is already done!
Assemble in only 5 to 8 hours."

Tough Aluminum Self-Locking Retract Gear Included!

Prepainted All-Aluminum Scale Spinner Included!

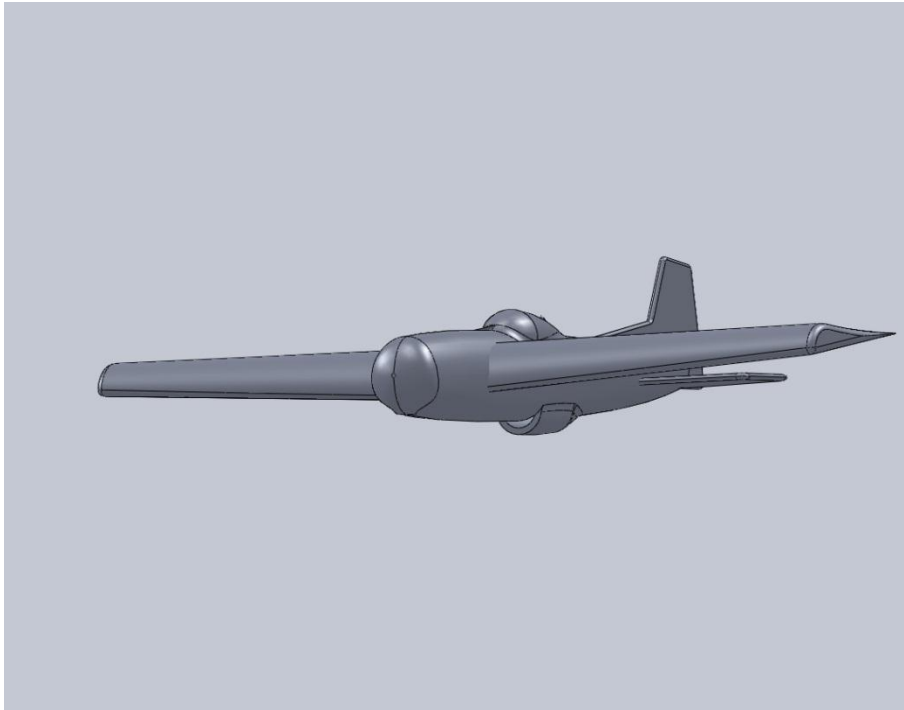
"The battery hatch fits so well that it is barely noticeable when mounted, and the pin latch works perfectly. Battery access in just seconds! Velcro retention straps and pre-cut slots are built in!"

ARF

Design

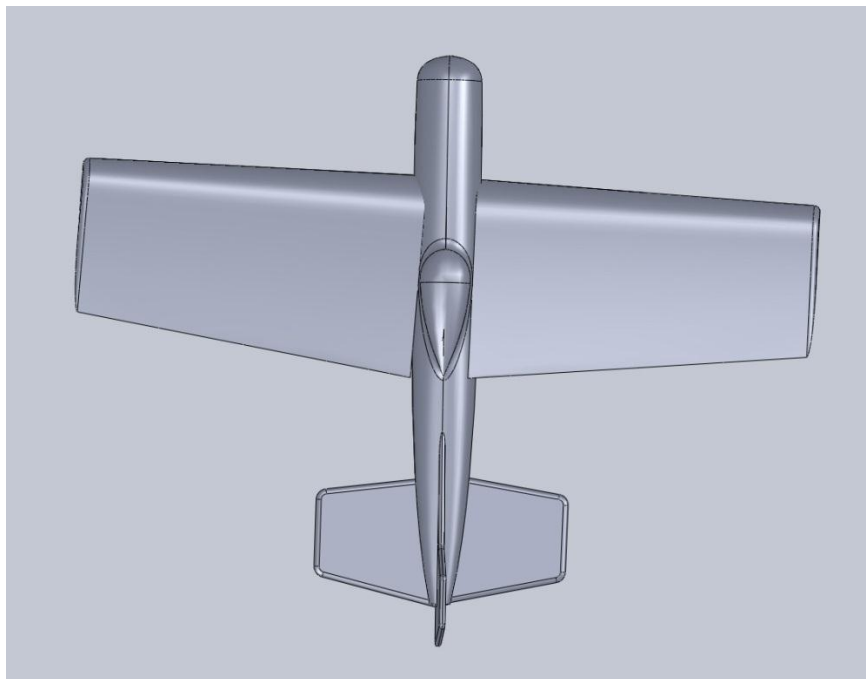
I based my design off of the above image of a remote controlled P-51. It gave me all of the angles I needed to be able to create my own model of the P-51. By far the most difficult part of the CAD design was the scaling. I ended up using 1 inch = 2.5 feet in my final design. Scaling curves and rounded edges proved to be time consuming but once I worked out how to properly scale the model I became efficient and the design process went smoothly.

CAD Photos



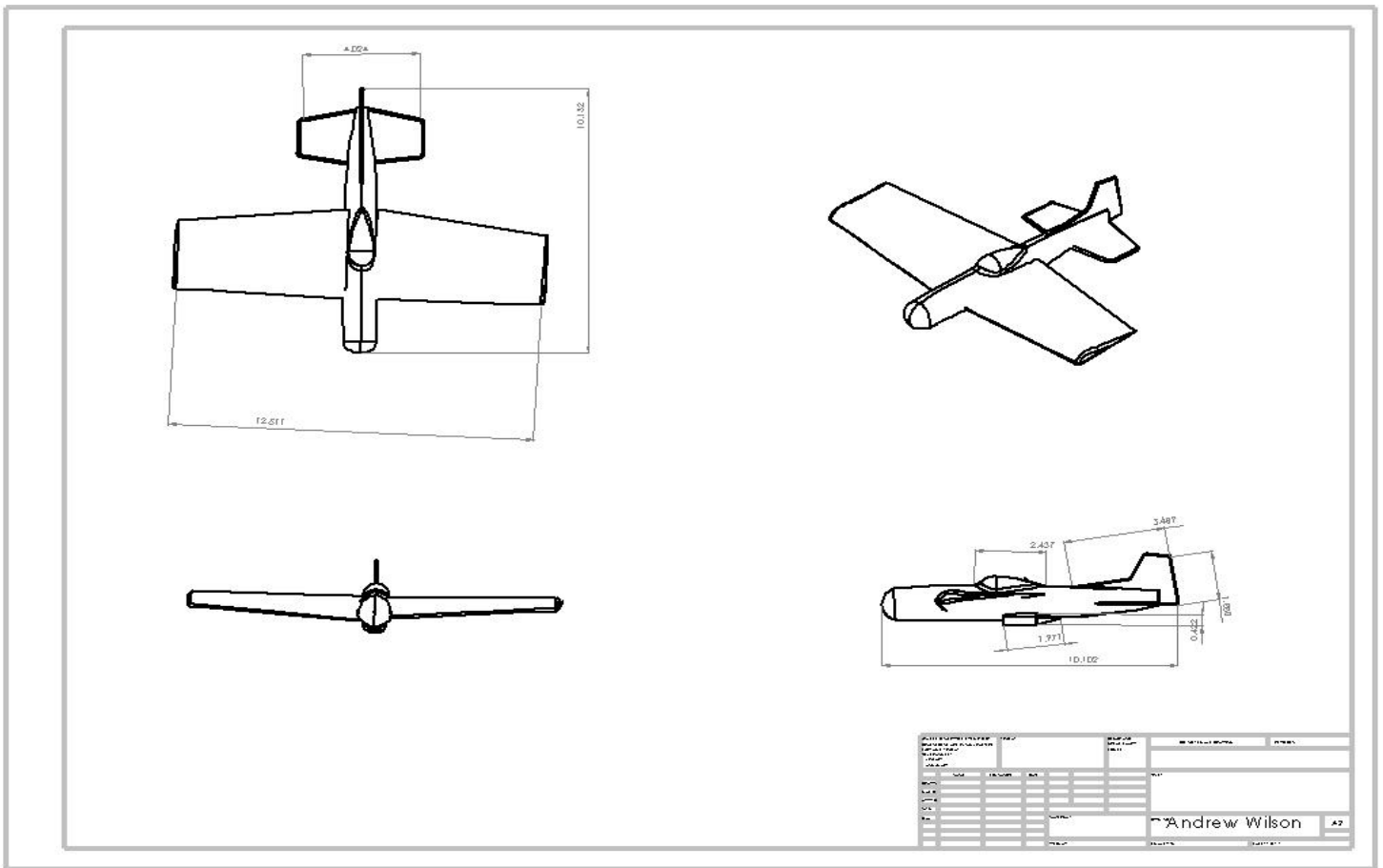
Above: This is an isometric view of what the P-51 looks like. Notice the air duct and cockpit were the two most difficult parts to implement.

Below: Top view of the aircraft. Mating the wing proved to be very difficult because the body was a cylinder. The wing did eventually mate and the model looks very close to an actual P-51.





Above: The wings are a typical airfoil shape. I used a mirror feature to create two identical wings.



This is the final drawing with dimensions. There are many angles and unnecessary dimension that I did not incorporate in the drawing.

Conclusion

Overall I had a lot of fun with this project. It greatly helped me learn how to use features in SolidWorks that we had never previously used. It was tedious and at some points frustrating but now I have the knowledge and skills to go back and create similar objects with ease. This project also has helped me to visualize designs. It has brought ideas to my head that would not have previously been possible and I am glad we were assigned this project.