RC flying wing Sine qua non II

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VIEW IN BROWSER

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Summary

A small RC fun flyer for easy aerobatics dedicated to vacation and after-work hours piloting.

Hobby & Makers > RC & Robotics

Tags: rc plane modular model rcplane airplane flyingwing flugzeug aerobatic transportable flugmodell

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Update:
Completely reworked the 3MF files:
- Newly defined print speed management saves about 40 hours of printing time.
- Printer type is still set to Prusa Mk3 - if you want to change the printer type, please **first** inspect the “Compatible printers condition” entries in “Print settings”→"Dependencies" and “Filament settings” →"dependencies" which both should be **empty** (due to a bug in PrusaSlicer I cannot set them to be empty by default).
(End update)

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Update:
I made a (detachable) camera pod to use with the SIne qua non and a Runcam Thumb or Thumb Pro. So, if you would like to record your flights

on video from an FPV perspective, just click the link above or go to the Remixes section. Here's an example video:

The cam pod can be retrofitted at any time.
(End update)
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Description

The Sine qua non II is the final result of a project I've occasionally been working on for about three years now. Unlike most other 3D printed RC aircraft, it is not just some kind of substitute for a model built in a conventional way but makes massive use of benefits that are proprietary only to 3D printing.

As a result, the model is extremely modular - meaning it's not just like “oh yeah, if you crash it, you can simply reprint it” but instead consists of 22 individually exchangeable parts, thus making sure that in case of an accident you will never have to reprint more parts than actually were damaged.

Oh yes, and it flies very well. It is very agile and responds to RC commands instantaneously, it can withstand some wind, and its broad speed range provides it's easy to master in those critical close-to-the-ground situations. It's not really a beginner's model (which, in my eyes, no 3D-printed model is), but if you can master a SkyCarver or FunWing, the Sine qua non makes a great next step.
Some flying videos I have taken:

Due to the model's self-locking plug mechanism not only the need of glueing parts together is minimized but also the model is built very quickly. You can start printing it on Monday, assemble it on Saturday afternoon and perform your maiden flight on Sunday.

I've added an extensive manual to the file set in which assembly is documented step-by-step. In the manual you will also find the bill of materials, a summary of filament choices, printing instructions (well, these are kept short thanks to the pre-configured 3MF files), and basic information about radio settings.

To print the Sine qua non II's parts you need a printer with a buildspace of at least 250 x 210 x 200 mm (W x D x H) - sorry, no Prusa Mini support. Filaments you need are LW-PLA (or LW-PLA HT) and PETG (and/or PLA, PC, PA, PA-CF...).
I have uploaded the printing files as 3MF (preconfigured in PrusaSlicer) as well as STL for those who can't use PrusaSlicer with their printers. So don't be overwhelmed with the sheer number of uploaded files - all you have to

print for the standard configuration is 16 3MF files. The 3MF files are pre-configured for the Prusa I3 Mk3 (-S, Plus, Mk4, etc.), so if you have this/one of these printer(s), you will most likely not have to change any settings.

Model files

LW-PLA_3MFs 12 files

wing-2-right.3mf

wing-2-left.3mf

elevons-left.3mf

wing-1-right.3mf

small-parts-lw-pla.3mf

elevons-right.3mf

winglet-left.3mf

wing-34-right.3mf

wing-1-left.3mf

wing-34-left.3mf

wing-5-both.3mf

winglet-right.3mf

PETG_3MFs 4 files

fuselage-covers-petg.3mf

wing-holders-petg.3mf

fuselage-petg.3mf

small-parts-petg.3mf

LW-PLA_STLs 11 files

elevon-1-left.stl

elevon-3-left.stl

elevon-4-left.stl

wing-5-left.stl

winglet-front-left.stl

wing-4-left.stl

spar-stopper-left.stl

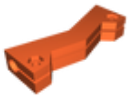
winglet-back-left.stl

wing-2-left.stl

wing-1-left.stl

wing-3-left.stl

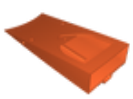
PETG_STLs 10 files



wing-holder-front.stl

bushing-485x3.stl

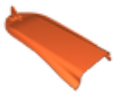
wing-holder-back.stl



fuselage-back.stl

bushing-6x3.stl

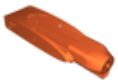
elevon-2-left.stl



canopy.stl

back-access-cover.stl

bushing-8x4.stl



fuselage-front.stl

Alternative_and_optional_parts 16 files

cover-clips-petg.3mf

cover-clips.stl

tension-washers-m3.3mf

tension-washer-m3.stl

additional-firewall.3mf

additional-firewall.stl

elevon-adjusting-gauge-right-pla.3mf

elevon-adjusting-gauge-left-pla.3mf

elevon-adjusting-gauge-left.stl

wing-34-left.stl

simple-winglet-left-lw-pla.3mf

simple-winglet-right-lw-pla.3mf

simple-winglet-left.stl

spiroid-winglet-right-lw-pla.3mf

spiroid-winglet-left-lw-pla.3mf

spiroid-winglet-left.stl

Other files

sine_qua_non_ii_manual_v1.pdf

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