

**RC Groups****R/C Blogs**Build Log **60" Zipper Slope Soarer****#1 gke**

Jan 02, 2017 03:10 PM

60" Zipper Slope Soarer

Time to build a plank with a bit of "Wick" so this is a build of the 60" Zipper put with a PW51 airfoil . The Zipper was originally Birdworks way way back with an EH 2-10 airfoil but for more than a decade it has been available as a part kit from Off The Edge Sailplanes in Oz. Yes it is an old design but then not all new things are that good.

<http://www.offtheedge.com.au/page.php?id=16>

Mine will probably not be quite as pretty as that on the Edge page my first build being WBPU and a few layers of light glass cloth. I will add a thin strip of carbon plate as a spar to help out the somewhat thinner glass skin. Glenn aka "Zipper" offered to cut me a set of balsa elevons as well which I will sand to profile if required as I will see if the WBPU covered elevons prove stiff enough. I will most likely commit sacrilege and add a motor :censored:. Sort of functioning ballast.

There are a number of build threads out there and the outline instructions are on the Edge pages:

<http://www.offtheedge.com.au/page.php?id=29>
<http://home.earthlink.net/~jaffee/zipper.html>

#2 gke

Jan 12, 2017 07:22 AM

Kit Arrives

5 Attachment(s)

Kit arrived from Edge yesterday.

Really nice foam cutting with crisp TE and well formed LE so I will stick to the original plan of just cloth over the lot and a simple blade spar. May push fin back a little and possibly increase its area.

#3 gke

Jan 20, 2017 12:01 PM

Starting

5 Attachment(s)

Inserted 12x1mm carbon strip on edge as a spar with carbon tube glued to the strip for joiner sleeve. Used PVA masking taped down to contain the foaming adding weights to keep things flat. Added ply root endcaps will have carbon tubes carbon tubes for breakaway nylon rods.

I will use lightweight filler to resurface the foam. I have given up on epoxy and will stick with WBPU and probably two layers of 3/4Oz cloth. The wing is now much stiffer with the stripper and so I will paint the surfaces and then put them in the wing beds with mylar when just touch dry.

Turns out the only flat surface I have is a family room benchtop so a rework of the garage is next on the list.

#4 gke

Jan 21, 2017 08:04 AM

Servoes

5 Attachment(s)

Servoes are top-pull for bottom hinged elevons.

Holes for servos are cut right through to bed and are up against exposed carbon strip spar. Holes are slightly inboard of midpoint at 320-355mm to allow for elevon taper.

Floors of holes are 1.5mm ply pushed down until flush with bed. Holes coated and floor fastened with 5min epoxy. Ply will be sanded/filled as required to preserve bottom surface profile.

Servo mounts will be added later - probably just ply locators. Servoes are flush with surface so it will probably be tape/film covers.

Trenches for servo wire duct (Maca's straws) cut and duct glued in with PVA. A bit messy and would have been neater with a hotwire loop.

The foam has turned out to be uneven in density with soft areas and occasionally hard beads.

#5 gke

Jan 22, 2017 12:27 PM

Almost Ready for Covering

4 Attachment(s)

Fin epoxied to carbon rod which will be fastened to fuselage after the wing is mounted so it is

all square. There will be a short tail boom as on my other planks pushing the fin about 150mm further aft to increase the moment arm.

Anchor points for LE root fitted and most of the patching done.

I will use nylon bolts or servo snake lengths inserted in tube which will shear if the inevitable happens. Hold down bolts will also be nylon through to captive nuts.

Lots of filler but it will all be covered shortly :).

#6 gke

Jan 23, 2017 08:55 AM

Covering

1 Attachment(s)

I jumped in at the deep end and covered the wings.

Usually I use one piece of cloth wrapped around the wing and then hang it out to drip dry on the clothes line after saturating it with WBPU. Those wings are white foam and quite stiff by themselves and because it dries uniformly across the wing there is no warping to speak of.

In this case the PW51 wing section is quite thin and the outer 1/3 of the wing has no spar. It is also meant to fly FAST so the wing has to be true. Unlike my other wings I used the WBPU sparingly and slightly too sparingly on one wing as I had bubbles on the top surface - only the bottom surface was sitting in the beds and it had no bubbles. In hindsight it may have been better to paint the cores first and cure them in the beds before moving to the glass layers. It seems that the foam is relatively porous and took up some of the paint out of the cloth. I plan to check this on a test area of the beds later.

I used mylar initially to protect the beds but that was too slippery and so I went to oven bake paper which has a little key and should not stick.

I removed most of the bubbles by repainting and then partially flash drying with my film iron. This time I put the top bed on as well and weighted it up.

The wings will now sit there for 3-4 days to cure. Hopefully they will stiffen up enough not to require the beds for the next 1-2 layers of glass + 1 on the LE.

#7 gke

Jan 31, 2017 05:24 PM

Fuselage

10 Attachment(s)

Wings are nearly done apart from some sanding and another few coats of WBPU. Ended up with two layers of cloth generally one aligned with the wing and the other at 45 degrees.

Strategy was dry the first layer in the beds, to give a little stiffness, and then for later layers air dry and then cure in the beds. The overlaps give four layers on the LE for a bit of bump protection. Turned out to be MUCH slower than epoxy but then the chemicals are a little less iffy.

Elevons ended up being balsa with one layer of cloth at 45degrees. Quite stiff and torsionally strong enough.

Made a slight oops and got the root TE out by 3mm on one wing. Did not matter but looked ugly so it had to be fixed.

Fin is out on the boom and the initial glueing in was to get alignments etc. ; it will be filled in later. Boom length determined entirely by the length of the original box although my eye said it should be 50mm or so longer.

Pictures pretty much speak for themselves.

#8 gke

Feb 02, 2017 08:23 PM

Blistering

1 Attachment(s)

Slight problem. As I add more coats of WBPU blisters are forming which suggests that the PU may not be binding to the blue foam or there is some other reaction happening. The wings have now been consigned to the vacuum bag weighted down in the bottom beds. Hopefully the blisters will flatten and stay flat when the PU hardens - we will see. Vacuum bag is nothing sophisticated just one used for bedding/clothing with a non-return valve and the household vacuum cleaner. The double row snap lock seal is good typically lasting weeks so none of the fancy pumps etc.

#9 gke

Feb 09, 2017 05:00 AM

Blistering ...

1 Attachment(s)

Well the bagging reduced the blisters but not by enough so out with the scalpel and do what you have to do - slice them off and repair the gouging with filler. DEFINITELY epoxy resin for this type of wing in the future.

Wings now painted battleship grey which hides some of the defects but not all. Film hinges and servoes next.

Still tossing up whether to fit the motor now or later. Fuselage is oval not circular at the frontend so it will probably not be pretty - maybe it will just look like airscoops ;).

#10 gke

Feb 12, 2017 08:31 AM

Hinged and Start Painting

3 Attachment(s)
Hinged - rough as :(.

Wedged TE to stretch hinges little to give some "up". First coat of a splash of yellow to aid orientation.

#11 gke

Feb 20, 2017 12:37 PM

Pretty Much Finished

5 Attachment(s)
All assembled - wings rough but should fly. CG will be OK with tail boom.

Need to think through canopy fit.

#12 gke

Feb 20, 2017 04:56 PM

First Flight

1 Attachment(s)
Wind speed 7.5m/S WSW at Glenfern Road - slightly off the slope

AUW 522gm with 700mAH LiFE 2S pack too light for the conditions and lacked penetration; a bit of ballast would sort that out. Control surface areas absolutely designed for going fast and lacked authority in the conditions. Just floated away in the slope lift and may even thermal.

A bit interesting to judge orientation with the Sun behind it.

All in all good fun :).

#13 gke

Feb 20, 2017 04:59 PM

First Flight

Wind speed 7.5m/S WSW at Glenfern Road - slightly off the slope

Needed around 30gm of Lead on the nose to get CG at around 38mm. AUW 522gm with 700mAH LiFE 2S pack too light for the conditions and lacked penetration; bit of ballast would sort that out.

Control surface areas absolutely designed for going fast and lacked authority in the conditions. Just floated away in the slope lift and may even thermal.

All in all good fun :).

#14 slothy89

Feb 20, 2017 06:47 PM

Have you worked out the canopy yet? I'm starting a zipper myself, and can't decide

#15 gke

Feb 21, 2017 08:14 AM

Canopy

Quote:

Originally Posted by **slothy89** (Post 36923780)

Have you worked out the canopy yet? I'm starting a zipper myself, and can't decide

The original one arrived a bit "green" and buckled. I was able to flatten it gently with a hot air gun but it is possible/likely it will soften again in our heat. I think attacking it assumes you have foam rubber packing, at least in the nose, to hold it up which I don't have.

I just have it taped on at the moment but will probably build one out of low density solid balsa or polystyrene foam sliding on to the wing pegs at the back and with a simple pin lock at the front. These days I usually put an unsightly rubber band on as well as at least for the ones with propellers as I need it to park the folder blades.

Another alternative is to make a clip on one with light glass/carbon cloth if you have the means.

I will post what I end up with.

Cheers

#16 gke

Feb 26, 2017 03:06 PM

More Flights & Canopy

4 Attachment(s)

Zipper seemed to groove best at 35mm behind CG in very light conditions - struggling 4.5-5M/S. This is further forward than the 38-40mm suggested but it may be I am just flying

too slow.

Canopy work in progress attached. Still not sure whether to lock at the front or back?

#17 slothy89

Feb 27, 2017 05:42 AM

for the canopy lock, I'd go with a tab at the front, and the lock at the back.

#18 gke

Feb 28, 2017 05:47 AM

Quote:

Originally Posted by **slothy89** (Post 36973374)
for the canopy lock, I'd go with a tab at the front, and the lock at the back.

Yes I think you are right. The problem I need to sort is the wing root pins but trenches in the canopy for it drop over the pins should work.

The canopy is pretty thin at the front so as I have the 3/4oz cloth I will cover it.

#19 gke

Mar 03, 2017 06:54 AM

Flight Video

I did another test flight in very very light conditions and while the Zipper stayed up most of the time it was a struggle. Wind speed was lucky to be 4M/S so yes just a slight breeze.

I need to do some cleanups on the elevon hinges as the hinge tape is bulging into the lower surface airflow which does not help. Still flying with CG way forward at 35mm from LE and about 2-3mm of reflex to get it to fly in these conditions.

[20170302 Zipper @ Glenfern Road](#) (1 min 26 sec)



#20 gke

Mar 04, 2017 08:32 PM

Another Flight

Still light conditions but flying better after a tidyup. I suspect the old faithful EMX07 with a slightly wider chord and in particular tips will make a better all rounder.

We will wait for a howling gale.

[20170304 Zipper @ Tucks Road Near Flinders](#) (0 min 26 sec)

**#21 gke**

Mar 12, 2017 04:39 PM

Turning to the Dark Side

2 Attachment(s)

Winds are not that strong here reliably so a bit of electric thermal being added :rolleyes:. Just a baby 150W motor spinning a 10x6 (actually 10x4) Aeronaut. Some experimentation in motor angles still to come - its not as kicked over as it looks.

.... OK first powered flight minor down trim required. Motor angles good with no badness on throttle up/down . AUW 650gm. Flies much better with the extra weight as expected. Required 10gm on the tail fin to get the CG right.

Its a bit of a dot on the bat phone but the idea is there :).

[20170313 Zipper Electrified @ VARMS](#) (4 min 2 sec)



#22 gke

Mar 18, 2017 06:45 AM

At Last Some Decent Wind

Tuck's Road again yesterday and some reasonable wind - perhaps 8 M/S. That with some extra mass/ ballast of the motor and its alive :). Elevator controls airspeed nicely with no alarming popups etc.

Motor now a Hacker A20-22L clone with 9x7 prop. Vertical easily available and predicted 90 kmPH probably correct - certainly more than adequate.

Job done.

[20170317 Zipper @ Tucks Road 2](#) (1 min 49 sec)

#23 gke

Mar 20, 2017 08:13 AM

Colour Change

1 Attachment(s)

The yellow flash on the wing and tail was not cutting it so a colour change to fluoro. Note the nice crackle finish and the dodgy LE as mentioned before. The bubbles etc do not seem to effect the flight behaviour and as one of my flying friends said - "nice turbulators".

All times are GMT +10. The time now is 01:10 PM.