

## ZAGI LE COMBAT WING.

*by Klaus Weiss.*

In the U.S.A. R.C. pilots have been flying slope combat competitions for many years now. This challenging form of full contact dogfighting has recently come into its own, with the advent of 'new' construction materials which make damaged model, major rebuilds almost unnecessary, and at the very least it is possible to do a quick field repair and be back in the air within minutes.

Slope combat is an exciting, spectacular event to watch, and if you are the pilot, it will certainly challenge your flying skills to the max. Anyone from the novice to the expert can participate, and look forward to some adrenaline pumping action.

Early on in the piece, I can remember dogfighting with friends, using conventional built up models, but the end results were usually a major repair job or a big bin candidate, which can definitely wear the gloss off the encounter. Even later, using foam core wings, damage was still severe, but when you get a couple of guys flying together on the slope, the natural progression after a while, seems to be flying in formation, close calls and then full on aerial combat.

With today's purpose built slope combat models, there is no reluctance to engage another pilot in combat, because if you have a 'kill' registered against you and are knocked out of the sky, it is generally a matter of picking the model up off the deck and relaunching immediately back into the fray.

This new generation of slope combat models are generally thought to come from the innovative mind of Pat Bowman, who in 1996 saw a use for the "new" expanded polypropylene (EPP) foam which was being used as a packing material. This foam is light, strong and most importantly, returns to its shape even after a violent impact or distortion. Early EPP foam models could be considered to be aesthetically displeasing (just plain ugly), but these days there are a terrific range of foam models from flying wings right through to P.S.S. replicas, and all fly really well. These models feature regularly in the very popular U.S. slope combat meetings and one of the best, with a high success rate of 'kills', is the Zagi-LE from Trick R.C. in California. Their range is now available from the Australian distributor, AirXstreams, and the Zagi-LE combat wing is the subject of this review.



## The Kit.

There are very few components in this kit, and it can ready to fly in quick order. The reason for the Zagi's crash durability, lies in the 40mm of EPP foam leading edge, which has been laminated onto the dense, 2lb polystyrene remainder of the wing. The beds of the foam core wings may be slightly adhering to the cores, so carefully separate them if this is the case. You will find that the wing halves have been marked in different colours at the roots, so that you cannot mix up the cores with the wrong half of the bed. To make things a little easier, the servo cutouts have also been marked for reference, so that you know exactly where to make the cut outs. The only other items in the box are, a couple of pre-cut balsa elevons, a roll of coloured poly tape for covering, instruction booklet, control horns, threaded rods and clevises, a piece of EPP foam for repairs or nose re-inforcement, and corrugated plastic winglets. Not much, you say!! You don't need much more with this kit and it can be ready to fly in around three hours. Great.

## Construction:

Carefully separate the wing cores from their beds, as during cutting, the hot wire will have slightly melted the EPP foam, leaving "hair" on the start of the cores behind the leading edge and sticking the beds lightly to the cores. Sand the cores with #320 grade sandpaper and remove the strands and any irregularities, then vacuum them off. Round off the leading edge and sand the roots to fit, if required.

Use epoxy glue to join the bottom beds, which will be used as a jig when joining the wing panels, then do the same to the top beds. Join the wing halves with 30 minute epoxy. When cured, make a choice as to whether you will add the nose reinforcement and do so if desired. I did. Spray the cores with 3M 77 spray adhesive, which is safe on foam, then cover the model with the coloured poly tape, as instructed in the booklet. This tape adds both strength and of course, gives you the colour scheme. Additional tape is available from the distributor in various colours, if required.

The recesses for the servos, leads, receiver battery, nose weight and receiver need to be cut out next. I used a Dremel to accurately rout the holes, and fitted JR511 standard size servos.

You can see the marked out servo locations through the tape, so you cannot go wrong. Cut the recess for the battery pack and the receiver, taking care not to cut right through the wing.

If you want to use a standard 2 channel radio, then you will definitely want to invest in a Quillen electronic mixer, which plugs right into the receiver and servos and saves using an expensive computer radio and receiver for the mixing functions. The mixer is about the size of a 20 cent piece, and fits neatly under the receiver. Cut the elevons to shape and cover in poly tape. I used Graupner hinge tape to join them to the wing.

Tape the corrugated plastic winglets onto the tips. I used 3M double sided carrier tape and fibre reinforced tape to hold the winglets securely in place.

Balance the Zagi as instructed and set up the elevons with the recommended throws. My Zagi was balanced at 185mm (7.3 inches) from the LE at the centre join and required 50 gm (1.8 oz.) of nose weight to balance.

I chose to use the Quillen Micro Mixer with the Zagi, as it allows the use of a two channel

radio for the elevon mixing. This alleviates the need for computer radios and receivers, as well as mechanical mixers. The micro mixer weighs a mere 14 gm and is about the size of a 20 cent piece. It connects in series between the receiver and servos and consumes less than 3mA of power from a 4 cell receiver pack. It is ideal for gliders requiring elevon, 'V'tail and flaperon mixing, all of which can be selected by two simple program jumpers.

Elevator/aileron mixing can be set at either 50% or 100% servo motion. For me, this allowed me to use a receiver with a shorter aerial, which was taped along the wing and was not trailing out behind the model, which can be a recipe for disaster.

Elevon travel was set at 50% on the mixer, to give me 9mm travel each way. All up weight of my Zagi-LE was 577gm (20.4 oz), and it was ready for the test flight.



### Flying:

This is really what we all want to find out about. On the day I first flew the Zagi, it was gusting between 46kph and 55kph and I was feeling a little apprehensive, particularly in the launching method. The way to launch, is to lift the Zagi resting on the palm of your hand, with your thumb locked over the leading edge (just as if you were carrying a tray of food or drink at shoulder height) and just push it out into the lift. I need not have worried, as the Zagi is very stable and will only require elevator response as it gets up to flying speed. This is one of the sweetest flying slope soarers I have come across in a long time. It flew out rock steady, needing only some down trim on the elevator to get to cruising speed.

The Quillen electronic mixer worked perfectly and the Zagi showed impressive response to all control inputs. With the elevon travel at the suggested rates, the Zagi has a fairly crisp roll rate and loops can be as large as you want, really tight. In combat, the fast manoeuvres and snappy direction reversals can be performed with no problems at all. Practice those tight turns by banking the Zagi into a turn and pulling through with the elevator. The Zagi is more than happy to fly inverted, albeit with a few clicks of down trim. Speaking of the elevator, with the C.G. set at 190mm (7.5 inches) back from the leading edge (measured at the wing joint), it was very sensitive in pitch, and responsiveness to stick movements could be exaggerated if you are heavy handed. That is O.K. when flying combat, but for general sport flying, nice smooth stick movements are the go. I managed another session in very light winds, where my 2 metre floater was only just managing to hang in there, and the Zagi flew just as happily, just a little slower than previously.

With a wing loading of only 7.7oz/sq ft, the Zagi can be flown in light winds, yet doesn't require ballast to scream around in 70kph winds. It will handle them all.

The Zagi-LE combat wing is an efficient slope soarer, which will provide tons of enjoyment, is easy to build, damage resistant and reasonably priced. Because of its stable tendencies, I would not hesitate to recommend it to a learner as a first aileron controlled model. Flown in conjunction with the Quillen mixer, it is a good combination, and with the string of successes in combat competition in the U.S.A., is the choice for those wanting to engage other modellers of the same intent. Me, I just want to explore the sports flying capabilities for a while.



As one modeller said to me the other day, "oh no! Don't review the Zagi. Everyone will want one." Guess what. He could be right.

The Zagi-LE combat wing was supplied for review by AirXstreams, P.O. Box 697, Newport Beach, N.S.W. 2106. Ph.(02)9979 4643.