Windigo Composite

by Bob Hickman

Need a change from foamy park fliers?

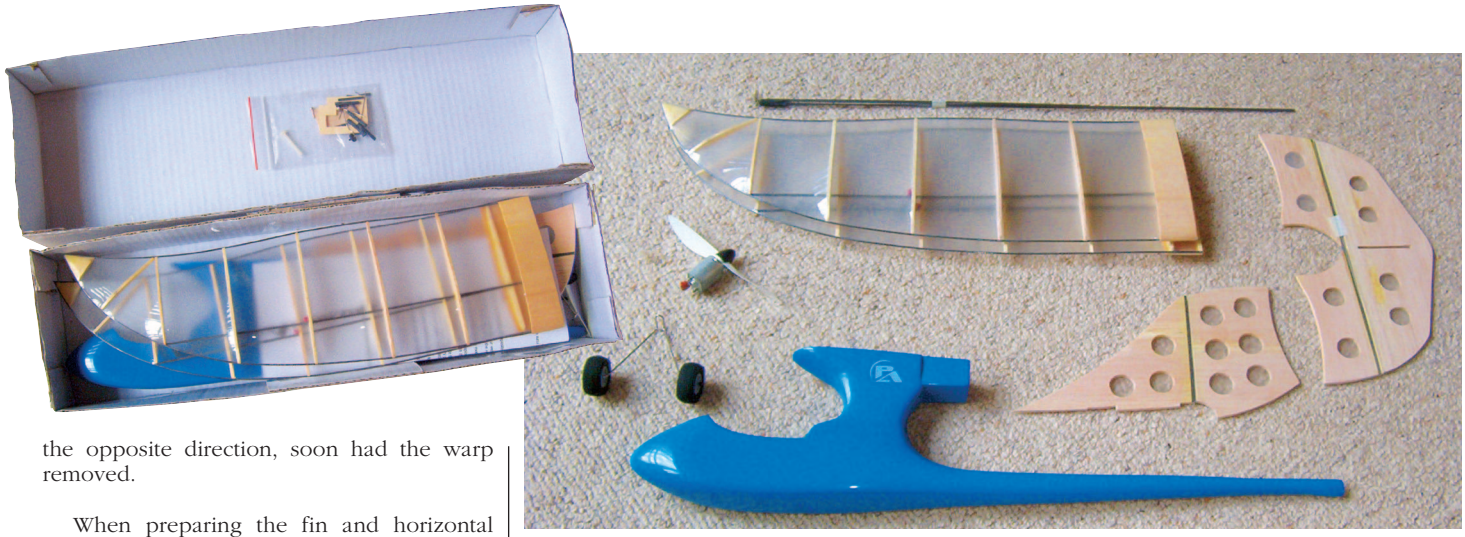
The Windigo Composite, from Precision Aerobatics, might be just what you are looking for.

This cute little electric-powered pusher model features a fibreglass fuselage and built up wings with carbon fibre spar and leading and trailing edges with balsa ribs.

The Windigo Composite is a 900 mm span almost ready to fly model that requires a little assembly. It comes with a motor, mine required a receiver, two micro servos an electronic speed control, battery and prop. I was very impressed with the quality of the Windigo components. The glass fuselage was beautifully moulded and the pre-covered wings and tailplane were very nicely made. Everything came carefully wrapped in plastic and thoroughly secured in a quite small, sturdy cardboard box.

I have a small confession to make here, after I took everything out of the box and unwrapped and photographed the major components, it became apparent that a bag of small components including the servo mount tray, control horns and a number of other small fittings was missing. I thought that I must have dropped them or thrown them out with the wrappings but an extensive search failed to find them. I was almost at the point of calling Adad Vanunu, at Precision Aerobatics, to report that there were some bits missing, when I looked at the inside top surface of the box lid. You've guessed it: there was the little plastic bag, containing everything that I needed, neatly taped inside the top of the box. Some years ago, the late Ken Willard, one of my favourite aero modelling authors, sometimes referred to himself as the chief dumb-dumb. Maybe I could aspire to this title.

Construction of the Windigo Composite was pretty straight forward so I will only highlight a few bits. As usual on a built-up model, I started by checking the wings for warps. The instructions don't mention this, but it is always good practice to check built up wings for any twists that might have crept in during storage or transport. The right wing was nice and straight but the left wing on my model had developed a bit of a twist. It would probably have made the aircraft turn left quite dramatically. Re-heating the covering with an iron, while twisting the wing in



the opposite direction, soon had the warp removed.

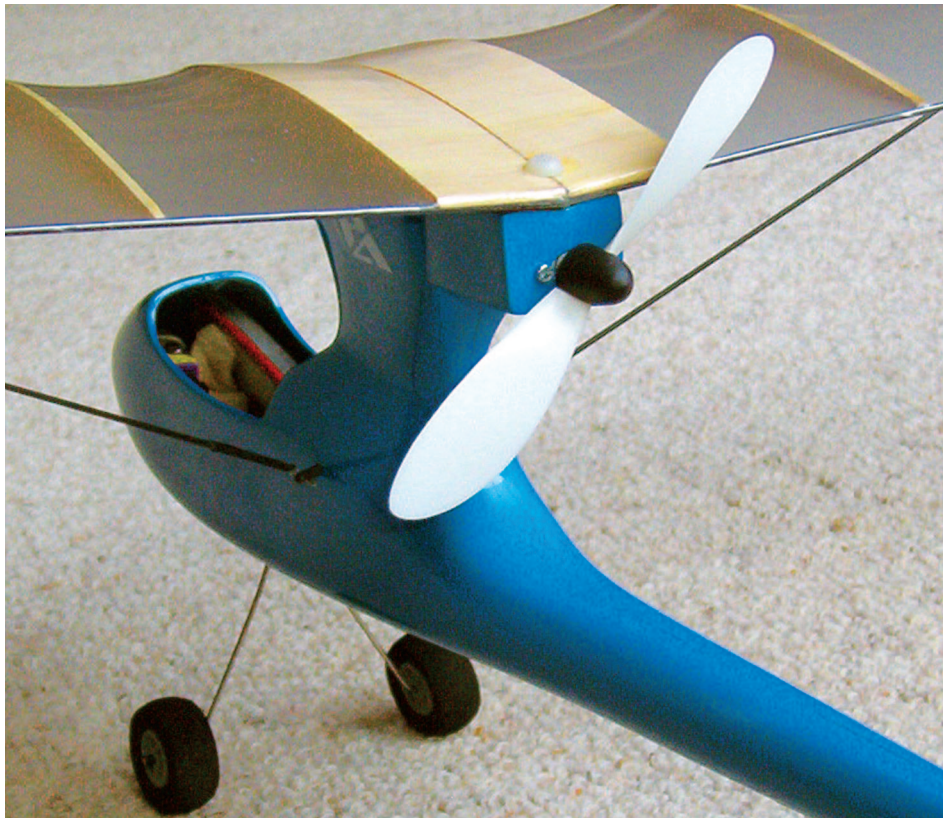
When preparing the fin and horizontal stabilizer for gluing, I was careful to remove all the covering material where they are to join together, as failure to do so will result in a joint that has very little strength. The fin aligns nicely with the horizontal stabilizer. It has a tab that slides into a corresponding slot in the stabilizer. On mine, the slot needed a few strokes with a thin file to open it up a bit so that the tab would fit in. The exact location for the rudder and elevator horns is not given but If you put the rudder horn as low and far forward as possible and the elevator horn as close to tailplane centre (on the right hand elevator) as possible, then you won't go wrong.

The 130 sized motor provided with the Windigo Composite has very strong magnets for such a small motor and poles quite strongly when turned over. A 5 X 4 prop is recommended and this is what I used. I measured the motor current at 5.5 Amps and the thrust from the little prop felt quite impressive. I noticed, after I installed the motor, that it had had quite a bit of left thrust. Removing it again and installing a little packing soon fixed this. The instructions suggested using a washer as packing but I used a little bit of 1.5 mm ply.

The wings are strut-braced with carbon fibre rods running from about mid-span down to the fuselage. This adds tremendous strength. As a matter of fact, everything about the Windigo Composite suggests strength. The wing struts attach to mounting pins that you fit to the wings and fuselage. Again, the exact location for the fuselage pins is not given. Looking at the photo, I decided that inline with the top edge of the fuselage at the cockpit opening and directly below the spar looked about right and drilled the required holes here. This, indeed, turned out to be just fine.

When installing the servos on their plywood tray, you are advised to temporarily position the other gear and slide the servo tray backwards and forwards until the correct centre of gravity is obtained. This is fine except that no amount of forward movement could get the CG anywhere near the 45 mm behind the leading edge position nominated in the instructions. I really had everything installed as far forwards as possible, with the battery and receiver pushed right into the nose of the aircraft and the servos directly behind them. I was using a two-cell 830 mAhr lithium-polymer battery that only weighed 40 grams but much of the weight savings afforded by using this battery were immediately negated by having to add 50 grams of lead nose weight to get an acceptable CG. Seven 650 mAhr NiMhs would have probably balanced the model quite nicely without the need for additional weight.

Everything else in the construction went well. I particularly liked the carbon fibre pushrods and the use of heat-shrink tubing to attach the wire Z-bends. Don't forget to put a drop of CA adhesive on the heat-shrink join to lock it in place. The construction was finished in about eight hours, distributed over a couple of days. The finished model weighed 310 grams ready to fly, including



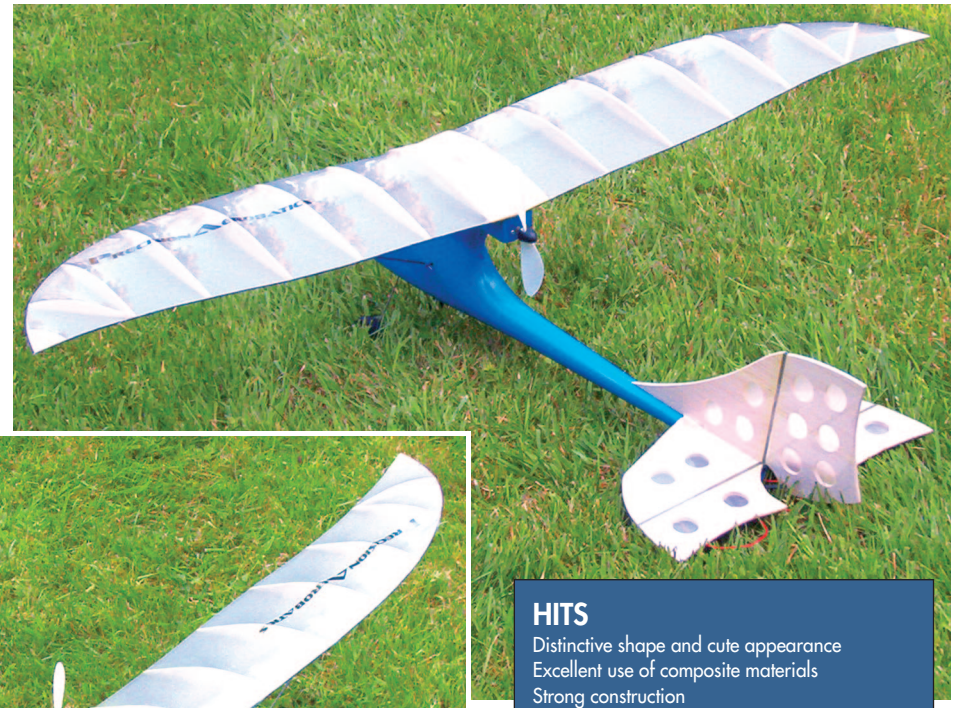
SPECIFICATIONS "WINDIGO"

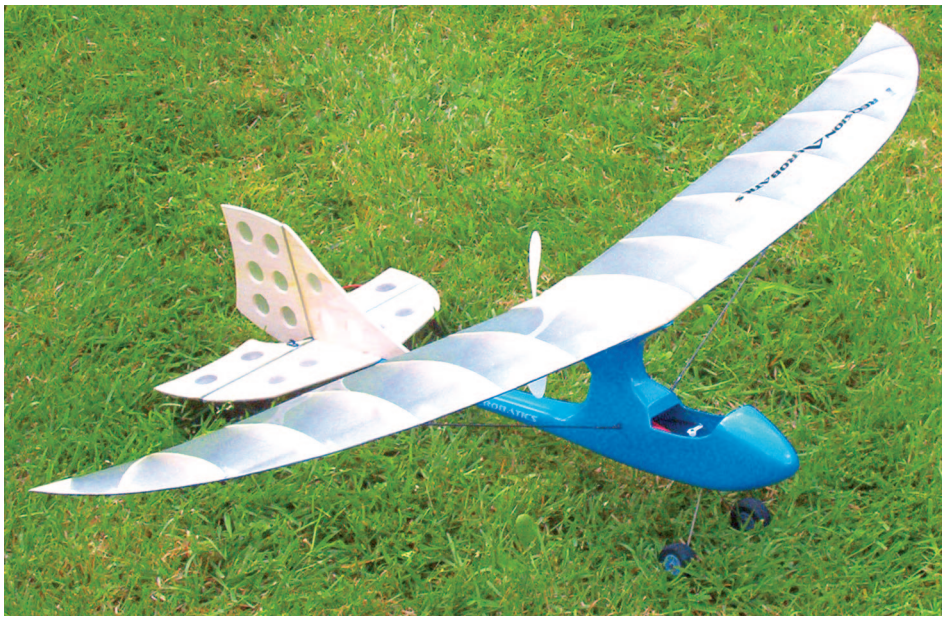
Distributor	Precision Aerobatics
Wingspan	927 mm
Weight (as tested)	320 grams
Wing Loading	31 g/dm2
Motor & Gearbox	180 direct drive (supplied)
Battery	2 X 830 mAhr (not supplied)
Propeller	5 X 4 (not supplied)

Available in 3 colours; red, yellow & blue
Additional equipment required....
Micro receiver, speed control, 2 micro servos
(Available separately from Precision Aircraft)

the 50 grams of lead in the nose. Other than the CG location, there are no set up instructions and no flying instructions.

As the weather was good, it was off to the field for test flying. That was the plan, anyway. A quick pre-flight range test (not covered in the instructions) revealed only about four paces of antenna-down range. The glitch counter on my excellent Schulze 835W receiver was indicating a huge number of glitches. There would be no flying on this day. Back on the bench, further experimentation showed that separating the battery and receiver helped. Eventually, re-locating the receiver to behind the servos, re-routing the receiver antenna and servo leads and twisting the motor leads while locating them further away from the radio gear seemed to fix the radio problems, though the range was still a bit less than normal. It's a long time since I have had radio interference problems but the long leads from the battery in the nose to the motor, back near the trailing edge, make for a more challenging installation. With the receiver further back, I needed to add another 10 grams of nose-weight to restore the balance.





HITS

Distinctive shape and cute appearance
Excellent use of composite materials
Strong construction
Stable flight and good breeze handling

MISSES

Instructions brief (only an issue for beginners)
Requires heavier batteries or additional nose weight for proper balance
Cramped fuselage space can lead to minor installation difficulties if you are not careful

FLYING AT LAST

From a gentle hand launch, the Windigo Composite pitched nose down a bit before some up-elevator established a climb. This model is by no means silent! As is typical of pusher prop installations with a trailing edge quite close to the prop, there is quite a roar at full throttle. The aircraft is not loud like a glow motored model but it isn't quiet either. The rate of climb was pretty good for such a small motor and the Windigo Composite was travelling a bit faster than I had anticipated. It should be capable of handling a stronger breeze than most park-fly models are comfortable with. With a pylon-mounted wing and generous tail area the aircraft is very stable yet quite responsive to control. After a little trimming I was able to persuade the Windigo Composite to fly hands off in free-flight mode, for circle after circle, drifting slowly down-wind in the gentle breeze. The high-mounted motor produces a bit of trim change and throttling up at low speeds produces some nose-down pitch. I suspect that a little packing of the motor mount to increase the "up" thrust on the motor may correct this.

The model's stall is straight and quite uneventful, though would have probably been pretty exciting if I had not taken out the twist in the wing and ensured that both wings had a little wash out, with the trailing edges lifted slightly near the wing tips. Landing were easy with a good glide and an easy flare to a gently touch down.

Overall the Windigo Composite is a cute and very robust little model. Its distinctive shape really gives it a lot of character. Its good speed range makes it more forgiving of a little wind than most small-field fliers. The Windigo Composite does not seem to be targeted at the rank beginner and its assembly instructions pre-suppose some experience in building, setting up a model and flying.

Kit supplied by Precision Aerobatics, Sydney. www.precisionaerobatics.com