ERWIN XL

Podvin Composite Modellbau's new 3m all-carbon sailplane not only looks great - it performs brilliantly too

Flying?

As this is what you want to read about first, it makes sense to start with a taste of what this model's all about from the outset, so let's cut to the chase! The Erwin XL is very fast - exquisitely smooth and has impeccable manners, retains its energy very well, but with a benign and very pleasant soft stall. The crow brakes are of the barn door variety and the roll rate is blistering for a 3-metre glider. As a thermal machine, the Erwin XL is plenty capable. Flown from the slope it's an absolute hoot, making any half decent pilot look good and it's certainly strong enough to D/S and, indeed, fast enough to race, as you'll read later. For me the Erwin XL ticks all the boxes, so if this sounds like your sort of six hundred quids' worth - read on!

Austria's 'Podvin Composite Modellbau' named two superb all-carbon gliders Erwin - their Erwin DS and this very fancy looking Erwin XL.

Podvin say that, from the first pencil line to the finished product, whilst computer aided, involved extensive practical work, with a series of tests involving flight data analysis from on-board loggers. CNC cutters and milling machines eventually spit out the moulds, after which there remains a deal of hand finishing work before a machine is sales-ready!

http://www.pcm.at/english/index2.htm shows the current PCM line-up, which, when last checked, stated delivery time for the Erwin XL as two to three months, which in the all-moulded glider world is considered reasonable! Hand-built creations like this Erwin XL cannot be produced along automated lines - this is bespoke tailoring rather than off the peg wear and, to qualify that, a few exotic racing machines have a two-year waiting list, which I have to say is ludicrous, given that many potential customers will drift away to helicopters, or maybe macramé by then!

PCM's ability to produce a first class composite aeroplane isn't open to question, but shipping from Austria to Wales (via Yorkshire) unfortunately proved a challenge too far, with one wing panel looking as though a bunch of Millwall supporters had given it a good shoeing along the way! Oh 'bother', I mused gently, but those nice chaps at T9Hobbysport ordered a new panel from the factory, unfortunately putting this review back a while.

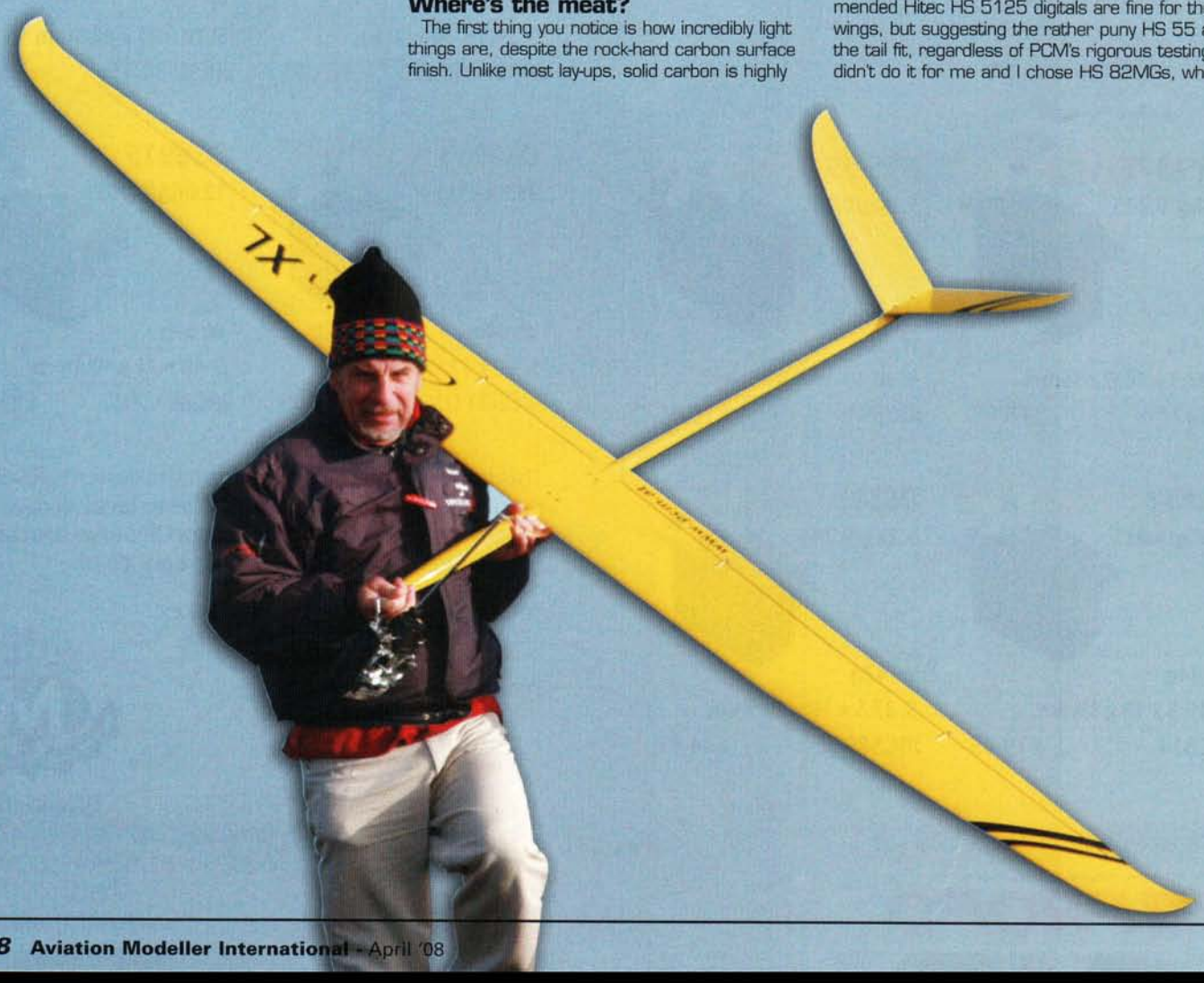
Where's the meat?

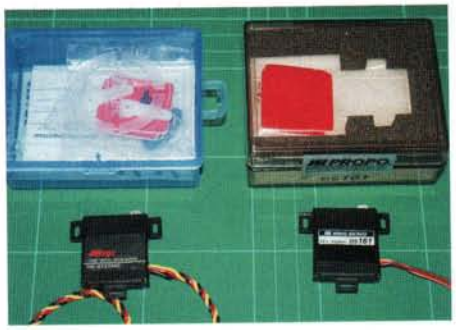
The first thing you notice is how incredibly light things are, despite the rock-hard carbon surface finish. Unlike most lay-ups, solid carbon is highly dent resistant, which pays dividends in the long term over sandwich mouldings. The design of the XL is full of novel touches, such as an alternative wing fixing method using tape, which is a brilliantly simple and much proven crashworthy alternative to the four bolt fixing choice also incorporated in this one's construction. A one-piece fuselage is employed, expressly formed to stand a bit of tent pegging action if your landings tend to be like that, which, along with a host of finer points, suggests from the outset that this one has been thoroughly thought out!

For your six hundred quid, or thereabouts then, you get a two-piece full carbon wing, fully hinged and finished, a one-piece bolt on Vee-tail, similarly prepared, a two-piece fuselage (more about which later), two carbon joiners and three alternative steel joiners, including an extra large one for ballast of up to three pounds! You also get six moulded servo covers, a set of ply parts for the radio fit and, last but not least, a semi-reasonable set of instructions.

Radio fit

Select your servos - you need six - two for 'ruddervators' and four for the wings. The recommended Hitec HS 5125 digitals are fine for the wings, but suggesting the rather puny HS 55 as the tail fit, regardless of PCM's rigorous testing, didn't do it for me and I chose HS 82MGs, which





ABOVE LEFT: *HS 5125 and JR DS 161 servos are virtually identical (same gearbox and case) so either will fit!* **ABOVE RIGHT:** *Supplied ply servo mounts were perfect for HS 125, 5125 or DS 161 wing servos.*

ing PC sockets have very doubtful long-term reliability, given that you cannot mechanically secure the pins or wiring due to the way they work. I went for good old Multiplex six-way plugs and sockets, but my initial arrangement was modified twice before I was happy, given the precious little room beneath the wing. I don't condone the practice of removing extra positives and negatives either, given that a single failure means a total loss of control, which is precisely why in the full-size world of aviation redundancy is added, not removed, so don't be tempted!

Fitting the 'sled' into the fuselage was easy! Fitting the sled with the battery and receiver in place invoked the odd expletive and fitting the sled with the latter, plus the nose ballast, switch and wiring connected up was akin to tying your shoelaces blindfold whilst maintaining a head-stand with three fingers CA'd together! My nose ballast was cast in damp sand in a baked-bean can, using a ply divider to create a two-piece cone, glued either side of the sled, with the rest of the day spent fiddling, trimming and test fitting the sled into the nose until it fitted perfectly, but achieving this was more challenging than my first encounter with Mr. Rubik's infamous Cube! Thoughts of dropping the nose into a bowl of water and filling it with molten lead came and went in a microsecond, this not sensible at moulded glider prices, so my ballast was crudely cast before final shaping with a craft knife.

The final countdown!

Adjusting all the linkages before locking them up solid (you DO lock yours solid, of course.. ?) slop was thus minimised by way of a bit of heat-shrink over each clevis allied to drop of thin CA into the threads! Now it's time to get things wiggling and waggling - invoke the maximum resolution that your radio will deliver for full throws on the primaries, which means 150% if your radio will deliver - not 100% which many assume is the 'correct' way. This just throws away resolution, so here's my method with my trusty old Eclipse 7 Tx.

Clear a memory down to ensure you start with a clean sheet. Computer radios can 'hide' all sorts of tricks, so cycle the memory (twice) back to factory defaults and ensure all your trim knobs are centred. Set all switches to default (suggest forward) positions and plug up one channel at a time to reduce confusion. With servos in their correct slots and all directions of travel correct, cease fiddling with the transmitter because it's time for mechanical (NOT electronic) adjustment. The trick to setting up a computer radio is, perversely, to spend 99.9% of your efforts in achieving mechanical perfection, just as you had to in the good old days!

Assemble the model on its back so that you can access every linkage and get your tools out. Each surface must be aligned perfectly and I don't mean nearly so but 'cock-on' to within a half turn on the clevis before the next stage, so holding each surface centrally with a clothes peg is a good tip to help whilst you fiddle with your links. Ensure that your aileron and elevator servo arms are as close to 90 degrees as the splines allow, then invoke sub-trims to get them spot-on! Flap arms need a start point one or perhaps two splines forward of the 90 degree point to enable sufficient down to be achieved and - again - ensure the two are set to identical angles, using sub-trims to finalise.

A Vee-tail and Flapperon mix will be needed, after setting your primary controls to maximum end point throws. Too much or too little and you'll need a different output arm length, NOT a different end point setting on your Tx - and take your time, it's crucial for perfection. Only when your mechanics give the correct travels with 125/150% (radio dependent) movements invoked do you start fine-tuning things!

Set aileron differential to about 50% for starters, making sure that you have more up than down, of course, and then invoke your CROW program, setting as much flap as you can get, remembering to leave some movement in reserve or you'll find yourself sans roll authority just when you need it most - ouch! PCM's advised throws are a starting point, but you won't know exactly until you fly the beast!

I can only speak for the Hitec Eclipse 7 from hereon in, but most half decent glider transmitters will be able to achieve the following. I invoked the following built-in firmware programs:
1 - FLAPPERON for full span aileron at the flick of a switch, 2 - FLAP/AILERON coupling for full span trailing edge droop or raise (channel 7 switchable). 3 - VEE for the tail. 4 - AIL DIFF and, finally, 5 - CROW, these all built into the glider function firmware programs with the Eclipse 7. I seldom if ever use rates but if you do, set these to around 80% on low (you can combine this function to a single switch if you so choose). NEG 30% EXPO was dialled in on the primary controls (Positive for JR users) and remember to set exponential on both rates (if you so choose). I then set up 'snap flap' and 'speed' setting on a three-way toggle switch and we were done.

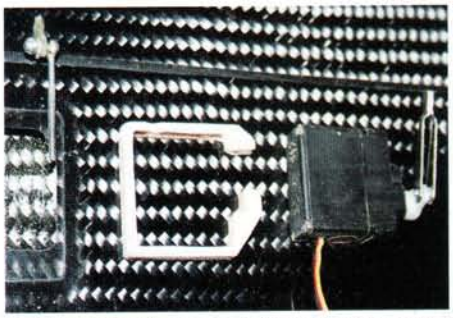
The Eclipse 7 has five free mixers and three flight modes too, so in theory you could do it all again twice, invoking different mixes, flicking between modes for comparison, perhaps employing different throws, exponential rate selections and aileron differential (useful for a race set-up), but about now I started to lose the will to live, given that I was itching to fly her. Modern R/C systems are all very clever - perhaps too clever at times - which is why some expect the electronics to sort out their lousy installation, which is a big mistake! The Erwin XL, when all's said and done, is a just another simple three-channel plus airbrakes glider, so don't get too hung up on the finer points until you've flown it a few times! If you use an IPD or PCM receiver, then set your fail-safe to full crow as it's a good indicator of glitches and the crashes are a deal slower too if it does go pear-shaped on you!

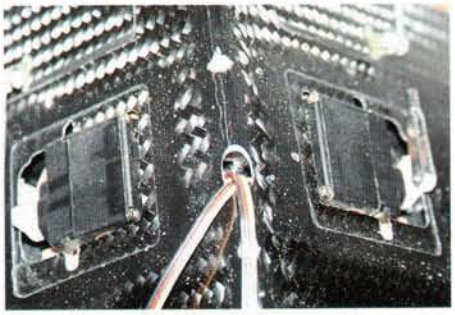
Flying - continued!

Back to where we came in - a very fast and aerobatic model, so here's my test flight experience.

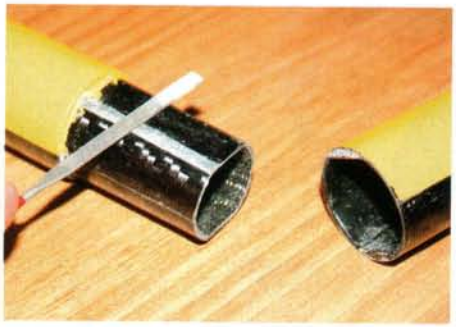
Extracting the XL from my very posh new carry bag, I assembled and rigged her, before performing a ground range check with one segment of the Tx aerial extended.

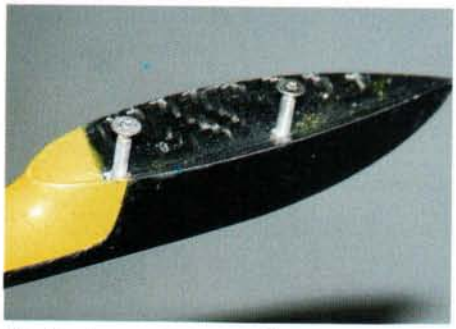
With a "one-two-three-go" we were up, up and away! Not one single click of trim was needed and I didn't even touch the sticks for the first five





ABOVE LEFT: *Carbon is difficult to photograph - here shown are my home-brew rear servo mounts for the HS 82 MGs.* **ABOVE CENTRE:** *HS 82 MGs fit perfectly and provide one answer to the tail end actuator choice.* **ABOVE RIGHT:** *All neatly installed - HS 5125 and its associated wiring - shown here is the flap servo.* **BELOW LEFT:** *Two very strong carbon joiners hold the wing halves together.* **BELOW RIGHT:** *Nose ballast was cast in two halves and then dressed to fit the nose.*





ABOVE LEFT: *Instructions are good - no complaints for a change.* **ABOVE CENTRE:** *Dressing the joint at the fuselage centre to get alignment spot on - see text.* **ABOVE RIGHT:** *The fuselage rear is a very neat and sturdy piece of work - tail bolts on as shown.*

just fit with a bit of fiddling. A four-cell 2500 NiMH battery went into that ultra slim nose and I filed a standard switch down before fitting it inside the forward fuselage to keep the external appearance clean! One seven-channel Multiplex IPD Synth receiver and half a dozen high quality 1000mm silicone extension leads from SM Services later and we were ready for work!

For anything other than JR DS 161s or Hitec HS 5125s, both of which drop straight into PCM's supplied ply beds, Cubitt servo mounts are the way to go. The excellent Cubitt mount has pretty much relegated the wholly abhorrent practice of gluing servos directly to wing skins to history and after having to grind one out of a wing panel a year or two back that some cretin had floated into place on a sea of epoxy - hurrah, says I! A penny-sized blob of five-minute epoxy may well be a quick servo fix and you may even claim that serious damage is avoided when this releases in a heavy arrival! Well, some say that real men eat quiche and it's equally okay for proper blokes to carry handbags, but none of that drivel washes here and how frustrating to loosen a servo on the first landing of the day!

Attention now to the tricky rear end, where PCM's instructions glibly say *"put your servos in the tail"* - thanks a bunch chaps, you might consider taking up a position in a government information office - you'll fit right in with your economic approach to detail! The robust Hitec HS82 MG will just fit into the servo bays, albeit with a bit of fiddling and filing, after which I made up a couple of ply/balsa/ply sandwich mounts, similar in essence to those supplied for the wings. Next up, I chopped the lugs off a couple of HS 82s and wedged them into my home-brewed mounts, setting up my transmitter and adjusting the links before affixing the servos with a very small blob of five-minute epoxy either side and, crucially, on top of my mounts. Despite my aversion to gluing - at least removal would be feasible with a swift attack of the Dremel if need be, so that was that!

Fussing with the fuselage!

The fuselage is a bit of a fiddle because it's presented in two halves and plugging the sections together almost resulted in a perfectly aligned fuselage. Once the wings and tail were bolted on firmly, a prolonged session of squinting from either end gave clue to the fact that the tail was ever so slightly out of true, which, given production tolerances, is more than feasible of course and the instructions detail this. The remedy involves dressing the flats of the male joint with a file just a shade, before rechecking until happy. Take your time as you need to fully assemble the model and it's big, so find somewhere with space enough to eyeball it from distance! I have to say that I would much prefer a one-piece fuselage with no ugly joint at the halfway point, but this isn't a major problem, just an inconvenience!

The battery, receiver and switch are the only components that live in the fuselage, which is how the Erwin gets to compete with 'size zero' female models on the anorexia front, but this one is far more curvaceous! The radio slides in from the wing bay on a ply sled, so cutting a couple of apertures for the battery and receiver, along with a rebate for the switch and wiring, I mounted my customised battery and the Multiplex IPD Synth receiver to it. To prevent the wires being pulled, I sleeved them before fixing in place with a splash of CA. After cutting the sheathing off a standard four-cell flat pack and folding two cells back to create a two x two inline shape, I wedged a couple of lumps of foam between the end caps for insulation before fixing that in place. I am never going to fly my Erwin XL from the flat, so the tow hook was binned and the supplied captive nut was then expoxied to a ply plate affixed to the inner fuselage to secure the sled to with a single bolt.

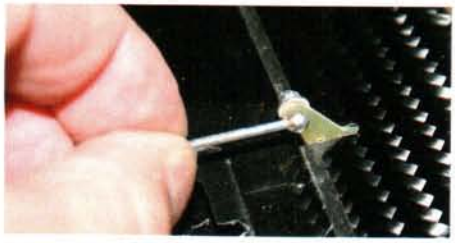
I spent a lot of time, getting each linkage and horn placement spot-on with this one. Don't be tempted to put the horns as far into the elevators as suggested, because the moment to the hinge line will then be tiny and you'll have to rate your radio down to achieve the correct throws, losing resolution and centring in the process. This is a flutter-inducing poor practice solution, yet I see it all the time - don't do it! Trimming the servo covers to fit, all movements were checked and confirmed as mechanically good with 125% EPAs on my Tx, before fixing everything in place.

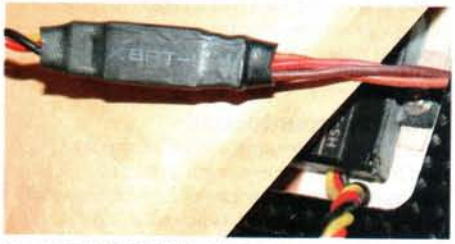
After screwing the servos into the upper wing skins! Placing a panel to one side, an odd reflection caught my attention and, sure enough, the supplied ply mounts were a whisker too thin, causing the servos to pull a definite rectangular mark into the skin. Worse still, the point of one screw had put a pip into the surface, imbuing me with the demeanour of a bang to rights expatriate Panamanian canoeist as I hurriedly loosened the screws! I was very relieved to see damage limited to the tiniest of marks, with the skins immediately relaxing back to their proper shape, so take some benefit from my experience and add a bit of 1/64" ply to your mounts, whilst grinding the sharp points off your mounting screws to be doubly sure of eliminating this potential snag!

With my servos re-mounted, four commercial pushrod ends were threaded up for back-to-back links. Extracting as much throw as possible from the flaps invoked a little relief work with the Dremel to hinge and linkage and I dispensed with the very 'blingy' blue anodised metal output arms that the 5125s come with, given that metal-to-metal wear will almost certainly be worse than with nylon arms.

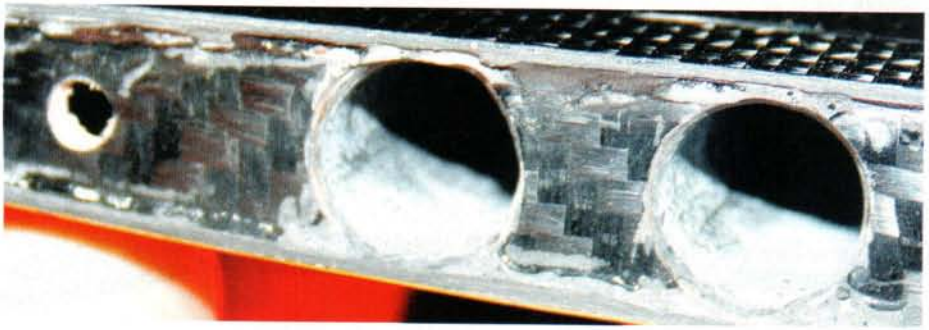
Wiring looms and all that

Plugging things up soon reveals a lack of room, so you need to think ahead. Canon type self-align-





ABOVE LEFT: *Epoxy-glass horns are employed throughout.* **ABOVE RIGHT:** *HS 5125 digital wing servo in place - do heat-shrink your extension leads - you know it makes sense!* **BELOW LEFT:** *The best solution by far for wing-mounted servos - Cubitts mounts (see text)!* **BELOW RIGHT:** *Lovely little HS 82 MG servo - perfect for the tail end.* **BOTTOM:** *The main wing root with joiner tubes - it's all carbon!*



or so seconds, she was that true. I eventually heeled her round in an arcing turn, pushing the nose down to accelerate along the ridge and three passes later I was completely at home with the big XL, marvelling at how smooth yet responsive she was as we carved the air up. With the sun glinting off the carbon and blue sea twinkling below in the late afternoon watery winter's sunshine, it was a beautiful scene for any glider guider!

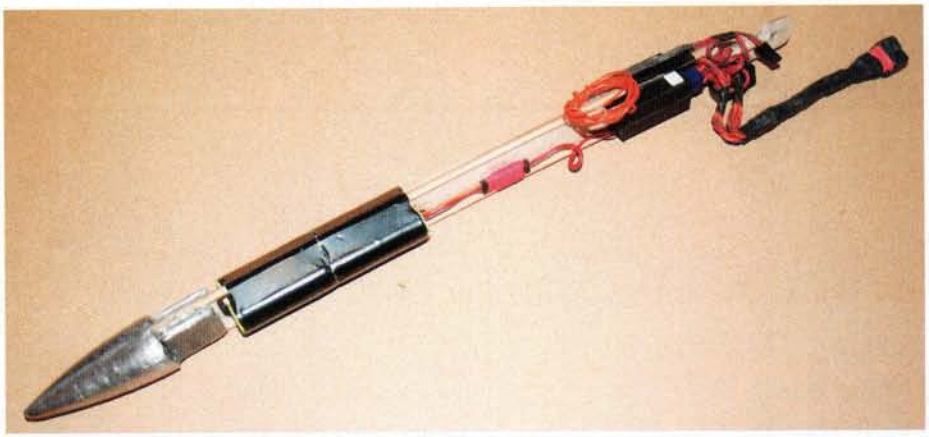
For the next ten minutes or so, we 'oooh'd and aaah'd, as I threw in a few ever bigger half pipes, dropping into a fast axial roll, followed by a period of inverted, noting how little elevator was needed to maintain steady progress 'downside-up' which confirmed that the balance point (not C/G...) was about right, before climbing to height to check out the crow braking. Full crow stopped the model dead in its tracks from about a hundred MPH and popping the crow away again, not a hint of ballooning confirmed that PCM's recommended settings for elevator compensation were on the money.

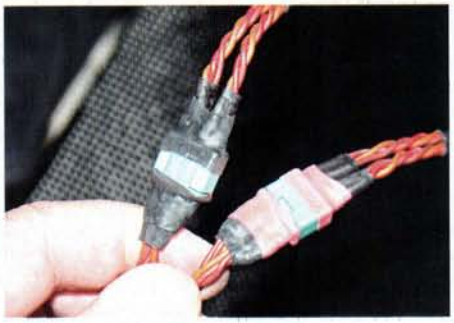
I dropped the nose for a low and very fast pass way down over the ocean for Brad's photographic efforts, before effortlessly climbing to height in readiness for a landing. Walking back a few yards, I selected an attractive looking flat patch and zipped back over this for a couple of exploratory passes to get a feel for the air. A final zooming climb out over the front, followed by a huge stall turn followed by a very fast downwind pass, pulling her up into a crisp loop to bleed the excess speed off, and we were set up for the landing with about half crow deployed to scrub away more speed as I hauled her into wind. Nose down - full crow - drop to fifteen feet - brakes away to accelerate over a bush - full crow down to a couple of feet and then away again for the touchdown at my feet and that, friends, is just about as good as it gets for a test flight! We called it a day at that and went home for tea and medals with the sun dropping into the sea and my fingers as cold as my ex wife's heart!

Sortie number two - wanna race?

The Midland League F3F race meet in early January (full report this issue) was ther excuse for a further shake-down! The XL isn't sold as a pure racer, but it's shiny and slippery and, undoubtedly, in the right hands it's bound to work! I replaced the two carbon joiners with the short steels for a bit of ballast - the right decision I have no idea (still) - but the XL would tell me as it left the launch if it objected strongly!

The fastest run of the first round was around 45 seconds, with most in the mid to late fifties, so my 61 seconds was not exactly blistering. No matter, that was a first go and I later dropped her into a couple of low fifties. The aggregate score put me near the back but not last, nor did I incur slowest single round time, so there you go, practise would put the Erwin in the frame for sure. Ballast swapping is a big part of the F3F game between rounds and here the XL doesn't score highly as the wing has to be removed to change weights, these being the joiners too. The answer is to use the bolt fixings, rather than a taped wing fixing, whilst making one wing 'quick-release' with a single plug and socket between the pair at the root face. This would let you whisk the ballast joiners out whilst the other, complete with wiring, stays put - simple enough to arrange with a bit of thought!

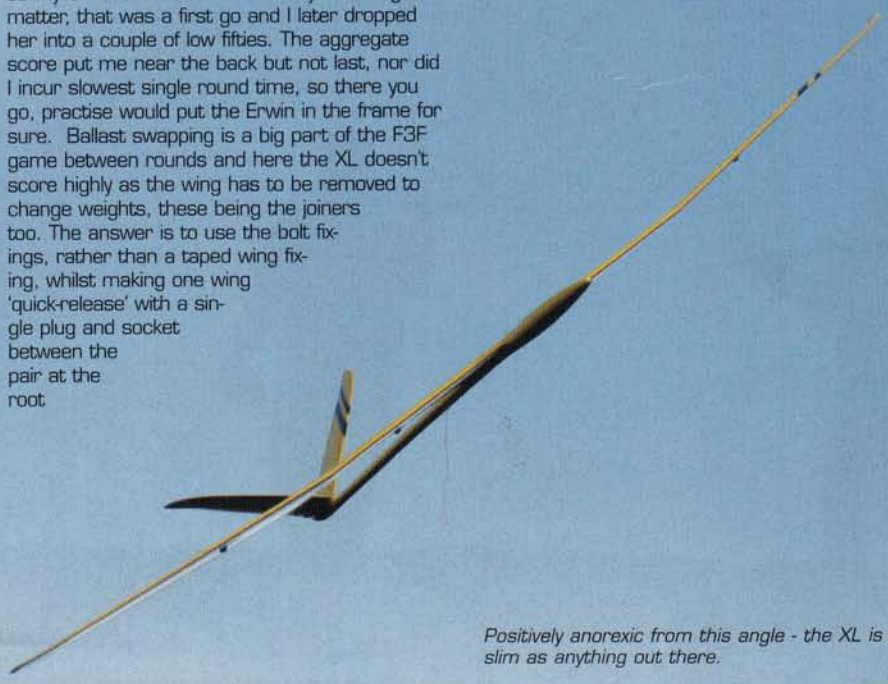




TOP: *The 'sled' with ballast - battery and Rx mounted.* **ABOVE LEFT:** *The casting foundry (okay, okay a baked bean tin on the cooker) for the nose ballast!* **ABOVE RIGHT:** *Left and right wing wires were heat-shrink colour coded - handy on a cold slope when you need to quickly assemble the model.*

Do you want one?

Even when provoked, the XL never threatened to get away from me, despite my ham-handedness through turns, but this was test flying rather than racing proper! Okay then, next time out we'll be having a 'proper' go with a by then more sorted setup! The Erwin XL is, regardless of racing, an exquisite model aeroplane with gorgeous lines and I was asked if she was for sale at the meet, but I had to disappoint him - she's mine - all mine! Take a look at her - there isn't a straight edge anywhere and in the months to come I am really going to enjoy her curvaceous slim body. I've already replaced all my Jalo pics with soft images of the XL for those quiet reflective moments! ■



Positively anorexic from this angle - the XL is as slim as anything out there.

Specification

WINGSPAN [MM]:
3.000 (118.11 in)
ASPECT RATIO:
14,67
WING AREA [DM²]:
61,33 (950.61 in²)
WING LOADING [G/DM²]:
35 - 60
WEIGHT [G]:
2.500 - 3.500 ((88-123 oz)
AIRFOIL:
vs 1
FUSELAGE:
CFR/GFR, strengthened with CFR rovings
WING:
CFR/GFR-shell without support material. Spar made of CFR-rovings and CFR/GFR-hoses
V-TAIL:
GFR-shell-construction with balsa as support material (no carbon so the antenna can be situated here). CFR-spar with GFR-hoses
PRE-FABRICATION:
- All surfaces mounted with silicone
- Surface gaps closed
- Two-piece wing
- Servo orifices and covers prepared
- Screw mounting for wing and elevator pre-fitted

RECOMMENDED (BY PODVIN) SERVOS:
Hitec HS-125MG - Hitec HS-5125MG wing servos and the HS-85BB or HS-85MG servos in the V-Tail for maximum performance.

In Brief

Things I liked about this model
1 It looks 'the business' and then some
2 All carbon (i.e. tough) construction
3 Sensible price
4 Performance and handling

Things I didn't like about this model
1 The two-piece fuselage