

Terry Mitchell's Valiant takes-off at the Bath Sparks 'E' Fly-In



Light Flight

Tilt-wing wonder and SUMO construction tips

At the time of writing, if you can avoid the occasional down-pour, the weather conditions have been quite good for flying. This enabled me yesterday evening to make a quick trip to the farmer's field (pity about the muck spreading though!) to test fly the very latest Horizon Hobby/E-flite Ultra-Micro, the T-28 Trojan. My conclusions were that it is absolutely brilliant and I'll be writing more about this model soon.

Colerne Fly-In

The Bath Sparks Electric Fly-In at Colerne was very successful again with good conditions apart from a wind that was very variable in direction and strength. This might have been the reason that, although flown by very experienced pilots, there were an unusually high number of crashes. Unfortunately these were usually on the unforgiving concrete resulting in severe damage. I flew my VT Squall and had the first ever mishap after launching in the model's long career. Luckily there was no damage other than some scraped foam and the second launch was successful. However crashes aside there were some amazing models on show with a high number of EDF aircraft both from kits and scratch-built.

New models are continuing to arrive from Silverlit via David Rawlins at Flying Toys Ltd and in this issue I am looking at the highly unusual V-Jet Full Tilt.

This Really is Different!

I'm used to being surprised by the ingenious models produced by Silverlit but this one takes some beating. Imagine a Bell-Boeing V-22 Osprey Tilt Rotor aircraft where the wingtip prop drive system tilts from horizontal to vertical; in the case of this model the whole wing tilts. This sounds quite complex mechanically – and it is!

The model is attractively and safely packaged and all that is required to get it ready to fly is to plug in the pre-formed U/C, fit the batteries in the Tx and charge the flight battery. The colour and design of the V-Jet Full Tilt combine to give it an attractively futuristic appearance; it's an appealing looking model. It is a 420 mm (16.5") wingspan, twin engine, T-tail, aircraft weighing 87 g (3.06 oz) made from a self-coloured EPP type of foam which gives a good level of rigidity with a high level of crash resistance. Numerous plastic fittings are used and the twin geared motors drive 160 mm (6.25") 'helicopter style' props with individual blades, a fly-bar and hub mechanics. The model uses a single 350 mAh LiPo cell that is charged via the 27 MHz Tx that is of a conventional appearance and has some special features due to the nature of the model.

The left-hand stick controls the throttle while the right-hand stick controls the tilt mechanism and the yaw. This control uses a horizontal 'H' plastic moulding to separate the stick movements for



The Green Finch finds the wind a bit of a problem



Dave Chinnery's twin flew well but eventually, like a number of other models, it bit the runway rather badly



The E-flite Ultra-Micro T-28 Trojan is superb in every way

the helicopter and aircraft modes. Two separate trims are provided and these are a rotary control for roll and a press button for the yaw. Basically when flying in the helicopter mode both trims may be required but when in the plane mode only the yaw trim is needed. Looking at the aerodynamics of the model it has many features that are obviously integral and essential for flying successfully.

The undercarriage is obviously a very lightweight unit with small wheels and this limits the type of surface that can be used in the aircraft mode. Before flying the mode must be set by moving the right-hand stick. This changes the modes and the change from helicopter to aircraft is quite fast while the change from aircraft to helicopter is slower.



The right stick on the Tx has a special 'H' movement



Holding the V-Jet Full Tilt gives a good idea of the size



In the aircraft mode the model looks more conventional



Motors and the wing rotating control rods



The V-Jet Full Tilt flying outdoors in the helicopter configuration



In aircraft mode the wing is still at a surprisingly steep angle

In the aircraft mode, control is achieved with the left-hand throttle stick and right-hand lever, which operates proportional throttle for steering and the yaw trim if required. In the helicopter mode the throttle and right-hand stick are also used but in this configuration the right-hand stick operates both proportional throttle and moves the individual wings a small amount rather like very large ailerons. This is where the roll trim is used if required. In the helicopter mode the props provide plenty of thrust for take-off and hovering flying.

Will it, Won't it?

After a brief hop in the back garden flying tests of the V-Jet Full Tilt took place in the school gym and then in the farmer's field. Both were very successful. Initially in the gym I found the model flew well in helicopter mode and had fun piloting it around. It is surprisingly easy to control and can be flown with a good degree of precision. I tried the in-flight mode change but with the limited height of the gym the model could not pick up enough speed before a turn was required. I am sure that if flown in a larger space it would be fine, so I moved outdoors for the next tests.

Initially I opted for helicopter mode and again the model flew well although, in a light breeze, the noticeable forward speed when flying indoors was now only just enough to fly the model forward. Hand launching the model in aircraft mode produced a very pleasing performance. The model was able to perform smooth turns in either direction and the motors provided ample power.

The next step was to test out the transition performance and this was smooth and problem free. From helicopter to aircraft was obviously best performed into the light breeze while the aircraft to helicopter worked best with the model up wind. This enabled the model to then literally hover down to land. I found that in a constant hovering situation the flight time is around 3 to 4 minutes while combining the modes gives up to 5 minutes. The performance certainly exceeded my expectations and the V-Jet Full Tilt is undoubtedly a very, very clever piece of designing.

For a RRP of £59.99 you are getting a quite amazing example of sophisticated technology combined with a surprisingly robust airframe. This is a very clever model that I found very interesting to fly.

The Perfect Ring?

With the SUMO season upon us I thought a few words about that all-important shroud might be helpful. I have supplied a large number of SUMO plans worldwide and had feedback from the Canadians who quickly found that the design was indeed capable of the most outrageous type of flying! I still have plans available and can email them to anyone who is interested. If you do not have a nearby source of EPP Andy at Robotbirds (see Contacts) is geared up to supply you with the correct amount to build either the original or 3-D SUMO.

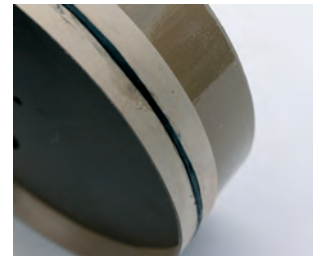


Of course everyone's idea of the perfect ring for your SUMO is going to be different but I've made quite a few and have established what I think is a good method. Of course a ring is not absolutely essential and if you make your

The secret of a good ring is a sturdy mandrel



The double layer of 1 mm ply with the feathered joint



A ring of CF tow increases the strength and rigidity



This is what SUMO flying is all about; streamers make it even more exciting

SUMO from 8 mm EPP some 2 mm CF rod bracing can provide enough rigidity. My early rings were formed around a baking tin but a friend kindly turned me an 8.5 in mandrel from 50 mm thick Tooling Board. A similar mandrel could be made from dense foam like 'blue foam'. For the ring I use two layers of 1.0 mm ply with the grain running lengthways. It helps to have a reasonably large prop slot as this reduces the opportunity for the prop to chew away at the foam. I happen to have a 1 m steel ruler that is 30 mm wide so use this to cut the ply to width and allow a 30 mm overlap in the length. The mandrel is covered in tape to avoid any adhesion when gluing the end of the ply strip.

After feathering the 15 mm overlap at each end of the first strip this is bent around the mandrel and the end glued with CA. After sanding off the joint the second layer is prepared and glued onto the first with PVA. The joints are positioned on opposite sides of the rings. When the glue has set the laminated ring can be removed and sanded smooth. Although rigid enough, I now add a ring of CF Tow glued in place with CA. CF Tow is a very useful material to have to hand and I found a good source is Free Flight Supplies (see Contacts). In the stock list 'Hi-Tech Mat' gets you into an amazing range of carbon and Kevlar products.

My finished ring weighs 30 g and when incorporated into the SUMO construction imparts a great deal of strength and rigidity to the airframe.

It would be wrong to think that making a SUMO is like assembling a 'quick build' foam model. There is planning to do before committing to cutting out some areas and the motor mount system varies a lot. If you have built one, or more, and have flown them, I'd love some photos.

Tailend

I'm always interested in readers' small indoor and outdoor electric projects. Information and photos are always welcome either directly to john@stennard.orangehome.co.uk or via the editor at Traplet.

I am available for talks/demos on indoor R/C within my 50-mile range of Bristol and as the Western Area Education Coordinator I am also happy to talk to school pupils and youth groups. **RCMW**

Contacts
Robotbirds
www.robotbirds.com
Free Flight Supplies
www.freeflightsupplies.co.uk