Newsletter

No.42: March 2025

Welcome to your Newsletter

In this issue: entertaining, in depth and informative articles from members, important committee updates and a number of items for sale or even free.

Please let me know of anything you would like to see included in forthcoming newsletters. All feedback and contributions are welcomed. Remember to play your part and if anything, interesting (or even better, funny) happens whilst you are visiting the flying field then drop me an email (with pictures) for the Activities at the Field section.

Members are particularly interested in how you got into the hobby, what planes you have owned, technical expertise etc...

Send any newsletter related matters and articles to me at: neilgrayson@sky.com

NB: The next newsletter is being planned for May 2025, and hopefully activity at the field will have picked up by then due to better weather so I look forward to receiving your reports from the field.

Membership and Applications

IMPORTANT MESSAGE: **ALL** members must complete and submit a fresh Application before paying your fees in order to renew your membership for 2025. Applications must be received before 31 March 2025. The different categories of membership application forms can be found in the club hut, on the club's WhatsApp group and soon on the new website.

Contacting the Committee

An email address has been created for members to contact the Committee about Club matters. If you have any questions, suggestions or general comments, then please send them to the following email address:

KRMFCcommittee@gmail.com

Runway Ruminations from the Committee

The Committee have been pondering and puzzling over the best way to re-configure our field and runways to avoid flying over the dog-park. It's not an easy problem to solve; the farmer has been very supportive of the club and simply said "don't fly over there" i.e. in the South field. That gives us the huge West field to fly in, but how do we align the runways to ensure the following?

- into the prevailing wind and,
- to allow a 'normal' flying circuit moved from 'south field' to 'west field' with a rectangular or oval shape and an upwind leg over the runway,
- not too near the main road or club hut!

We have an outline plan which will involve a new grass strip being cut as soon as the grass starts to grow again. We need to rotate the pilot boxes to point away from the dog-park. Helicopter flying will also be included and good hovering patches will be arranged. We'll be calling for Maintenance Days to get this going either late April or early May depending on weather.

Flying Field Power Source

One of the subjects covered at the recent Committee meeting was the installation of a generator and/or a solar panel power system. Sadly, the 'survey-style' article in December's newsletter elicited no feedback at all from members, so the Committee discussed the matter further and decided unanimously that both systems would benefit the club. The first step will be to purchase a generator with a charger and a 12V battery.

The generator will be used to charge up batteries with an external socket from the 12V battery and 240V will be provided inside for lights, heaters, kettles etc... A number of IP66 mains sockets will also be available outside so that when the generator is running members can use their own chargers on an AC supply to charge LiPos externally of the club hut.

The generator will be situated outside in a secure weatherproof box as far away as possible from the club hut to cut down on noise. A key will be stored in the club hut to allow members to access the generator, started with a push button.

The solar panel system to charge batteries will be purchased and installed at a later date. It is hoped that the solar panel system will be funded partly with club funds, but also with a grant from the SAA and also perhaps members sponsoring individual components of the system.

It is thought that the solar charging system will come into its own during the summer months but the generator would be used more in the winter to charge batteries, heat the club hut and provide hot water and soup.

Training and Testing Weekends

Last year the SAA and Scotland Area of the BMFA engaged in discussions aimed at cooperation, bringing the two organisations closer together. Part of that was the idea of attending Training and Testing events together, so that aeromodellers could see both organisations striving towards better safety and training, and offer modellers the opportunity to take any test they want: - Bronze, A, Bronze Plus, Silver, B, Gold, C or Examiner.

The SAA has already independently arranged the following events:

19th - 20th April - Caplaw Model Flying Group

14th - 15th June - West Calder Aeromodellers

23rd - 24th August - Kinross Radio Model Flying Club

4th - 5th October - Hamilton Model Flying Club

The format of our club's training day on 23th-24th August is unknown at present so further information will be provided closer to the date. If anyone is interesting in taking a test let a member of the committee know.

In order to make SAA events joint with BMFA, clubs have to request attendance of BMFA examiners from Scotland Area as well. BMFA rules state that a BMFA examiner may conduct tests only at the request of the host club.

Before the BMFA can advertise joint T&T events, they would need an email from the club's official asking them to arrange BMFA examiners to conduct any BMFA tests that are desired.

The Kinross club secretary has emailed BMFA Scotland to request attendance by BMFA examiners. Whether an event goes ahead depends on requests from BMFA/SAA members for testing and the weather.

Club Web Site

The club website was up and running briefly but has now gone down again as have other sites hosted by the BMFA. Andy Symons, the BMFA club support officer has been contacted and he assures us that he will have the site up and running again as soon as possible. The new web address is https://krmfc.bmfa.club and our new club media manager, Kev Scott will start adding content as soon as services are restored. If there is anything you wish to add to the site then contact Bill McDiarmid, Neil Grayson or Kev Scott.

Club's WhatsApp Group

If you want to be added to the club's WhatsApp group, please email Neil Grayson with your mobile telephone number and he will get the Administrator, Douglas Fulton to add you to the group. It is used for general chat, advice and to coordinate visits to the flying field.

Club Fuel

We still have a large stock of fuel. Contact a committee member if you want to purchase a few litres.

20% Nitro is £38 for 5 Litres

5% Nitro is £30 for 5 Litres

Motor Musings *by Ian McLuckie*

When you pick up a glow internal combustion engine you usually see a number cast on the crank case and you can reasonably tell its capacity and power, and have a fair idea about propellor size. If you ask a Club Member about their engine, they will tell you the manufacture, and - 'it's a 40 or 55' etc. and that's fine.

When you pick up a brushless electric motor you see a string of numbers on the side and get no feel for power. If you ask a Club Member about the motor in their model, they might tell you it's a 3s or 4s. That relates to the battery, the **'s'** stands for 'series' not 'cell'. If it is a 6s then that's a lot of power. They might give you a KV rating, which, per se, does not mean much in terms of power but is a rough indicator.

It's a problem but it is just how the brushless motor industry has developed. There are no international or national standards for sizing or rating brushless electric motors, even nomenclature differs between manufacturers and they are generally known as 'BLDC' motors.

So, what to do? We need to get into the subject a bit deeper to understand how much thrust or torque these brushless motors actually produce so we can make comparisons. I need more power but what size of motor do I need?

When an aeroplane takes off, the thrust must be greater than the drag, and the lift must be greater than the weight. We all know that. The key word is **thrust**. What is it and how is it measured with an electric motor?

You can skip the next paragraph; it is a bit heavy but it must be said: -

'*Thrust is a reaction force described quantitatively by Newton's third law. When a system expels or accelerates mass in one direction, the accelerated mass will cause a force of equal magnitude but opposite direction to be applied to that system'*

Figure 1: Note the 14 magnets and 12 poles

The **Newton** is our unit of force. It is defined as $1kg \cdot m/s^2$ the force which gives a mass of 1 kilogram an acceleration of 1 metre per second squared. So, I need more Newtons but they don't come in a polybag from China.

Since looking into this I see that some motor manufacturers quote thrust simply as 'g', - presumably grams. It should be 'gf' i.e. grams force, so what happened to the Newtons? The physics behind this are overpowering and not for this article which is mainly for light entertainment and some information, so we will leave that and move on. If you are really interested, please see Note 1 at the end of this article, good luck.

Before that though, let me moan about these motors. Everybody knows about motor kv, or is it Kv or kV or KV? You tell me… but kV is the international symbol for thousands of volts. The others are randomly used by brushless motor manufacturers. They say the 'k' stands for 'constant' so it's a relatively constant voltage motor. I can understand that, because a standard brushed DC motor can vary its output according to input voltage. (I tried a brushed motor on a glider - they are too heavy with lots of sparks, not so good). So, we put 1 volt into a 2200 KV motor and it will spin at 2,200 rpm or a bit less due to losses. So, 11 volts will spin it at about 24,000 rpm. That does not tell you very much because that is with no load i.e. no propeller, but

it is a start. Crudely, the higher the kV, the more powerful the motor will be, but that is not the end of the story because the power train comprises 4 parts, the battery, the ESC (for electronic commutation), the motor and the propeller and they all matter… yes - size matters.

I had a closer look at what it says on the tin or rather the can, that's what some of them call it. Some are labelled for example C2823 V2 2200KV…. a Surpass motor. I understand the C is for the manufacturer alone. The '28' is the measurement (mm) of the diameter of the stator and the '23' is the length of the stator (mm). But some manufacturers use frame dimensions instead, **don't be caught out**.

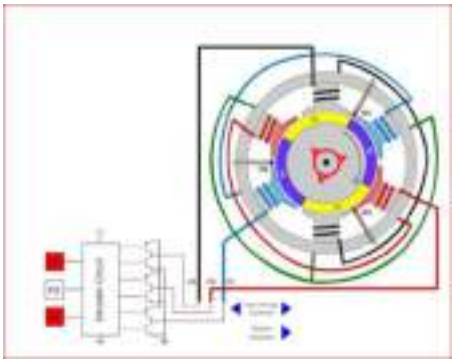


Figure 2: Standard windings on a brushless motor showing the three phases

The V2 might be version 2, and we have covered KV. Motors are all generally marked like this but sometimes they add something like '6T'. e.g. A2212/6T 2200KV. Apparently, that stands for 6 turns of wire on the stator poles. When you look inside the motor, there seems to be a lot more than 6 turns, especially with thin enamel copper wire. Given that the feed wires may have three strands of, say, 28-gauge enamelled copper wire, and they don't seem to be reduced to a single wire going onto the poles, that might explain why there seems to be dozens of wires going round the poles.

Talking about poles, most of our stuff has 12 poles but have you noticed there are 14 magnets on the inside of the rotor? It must be for smoothing out the torque, an empirical solution to make the rotation smoother. I can't find any other explanation.

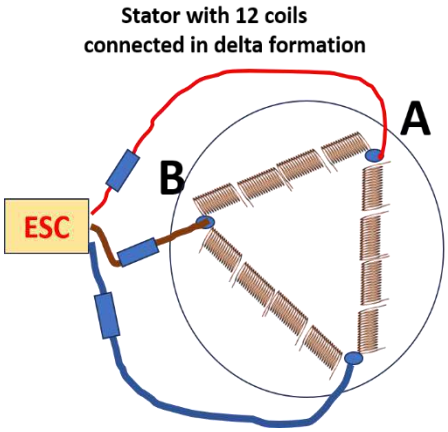


Fig 3: Standard RC aero winding

With 12 poles on most of our motors, there must be four poles per phase wound in series, it being a three-phase system. There are three wires going into the motor, there is no negative connection back to the battery, how can that work? Remember we are talking about a three-phase system supplied but an ESC, or given its proper name, a DC to AC invertor with a pulse width-controlled synchronous output, i.e. electronic commutation, to the motor. The poles are wound in delta format, i.e. a triangle. Considering some motors have 12 poles, the winding format can get a tad complicated. Star winding formation is almost never used although it gives more torque with fewer amps but less power overall. Fig 3 shows the 12 coils finally connected in delta formation with the familiar three wires connected to the ESC.

Sketch Fig 4 below shows how the windings are formed on one of the three clusters, each comprising four individual poles. The trick being to counter wind two of them and join them up across the centre of the stator.

There seems to be an unexpected relationship between the number of turns of wire on the stator and manufacturer's stated KV. It's an inverse ratio. For the **same can size** it does not matter if you have a high KV and low number of turns, or high turns and low KV, you will get roughly the same torque output. If you want more torque, you will need a bigger can.

So, you have to measure the current to calculate the power going into the motor. Ok, we multiply that with volts and we get 'x' watts going into the motor. That does not tell me if that is enough to push my aeroplane, only approximate motor speed and watts going in. How do I get to grams force **'gf'**?

For comparative power train performance, I see that some modelers us a simple jig such that the spinning motor, sometimes via a lever or even directly bearing down onto electronic 'domestic' scales, gives you 'grams' thrust. See Fig 5. That is good enough to make comparisons of motors and propeller combinations...just what we wanted. If you are well kitted out then the input watts or amps can be measured and you can take it right through to overall power train efficiency. There's a rumour that Club Member Hamza who is currently wintering in warmer climes, has experimented with such a jig; maybe he will let us know how he got on.

Figure 5: Effective force in grams

There are one or two professional test rigs on the market with instant read out of every known parameter, coupled of course to a computer. They even have systems of sensors mounted on a wall opposite the propellor to study the pattern of the forced air. Excellent stuff.

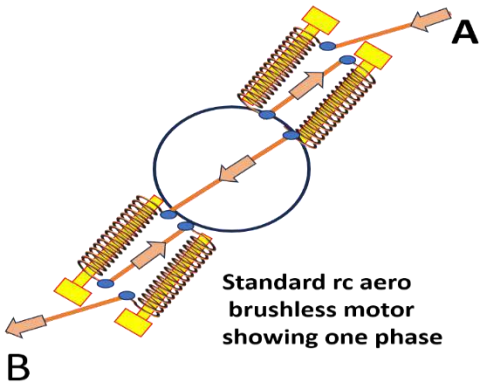


Figure 4: Note the counter winding on adjacent poles

Of course, these days there is a computer program to do all the hard work. You might want to look at computer tools for brushless motor power system analysis and propellor /motor selection. You can test thousands of combinations to get an estimate of maximum current, efficiency, propeller speed, etc. Try **'Motocalc'** (Ref 1) or **'Ardupilot'** (Ref 2), they all do about the same.

For Club Members new to aero models, here are on or two points which might save you some time and research.

Figure 6: Burnt - mea culpa

Rewinding a burnt motor, see Fig 6, looks easy in theory so long as you get the new windings going the right way. It is a very finicky job. Removing the set of poles from the 'back plate' is difficult. They are 'seriously glued' to the rear face and almost impossible to release. A bobbin of enamelled copper wire is relatively cheap so a rewind is definitely 'on' - but it is hardly worth the bother balanced against the cost of a new motor. Especially these budget unmarked motors which are, in general, fine but sometimes have a modestly reduced performance compared to the 'big name' models.

The same goes for changing a shaft. Your propeller wobbles because you struck the ground…very common. You think you have bent the shaft and all you need to do is insert a new shaft. New shafts are available and very cheap. I doubt you bent the shaft as these steel shafts and very robust. I can only suggest that it's a misalignment where the shaft joins the aluminium bell, which is, for me, unfixable. More usually it's the collet set gripping the shaft motor which is made from aluminium and is easily bent… but difficult to recentre.

So, your motor has failed. There is no sign of burnt windings. This happens a lot then you land and the propeller is jammed on grass or bushes and there is still power going in…no throttle cut!! Some smoke emerges and you quickly blame the manufacturer hoping for a replacement under guarantee. If there is no real sign of burning then the only other thing is insulation failure i.e. the enamel on the windings has shorted out and pulled too much current from the ESC- and the ESC is damaged so you are in for a new set. It's an expensive 'no-throttle cut' or zero throttle on hitting the ground.

Finally, I see that some enthusiasts prefer to estimate their motors by working out the Watts/ lb. i.e. the **power input to the weight** of the aeroplane. They even have categories. When matching a motor to a model type, Watts per lb or kilo or gram or whatever - is a ratio they use e.g. sport gliders = 75-100 W per lb, hotliners - up to 250-300 W per lb and so on. Large 'aerobat's' can be a massive 800 - 1000 Watts per lb. If you liken Watts to HP you're getting there and of course the data sheet you get with your motor will give you a 'ball-park' number for both Watts and Amps.

Aeroplane type	Watts input / lb
3D full power	150-220
Circuit racing	100-150
Sports flying	75-100
Trainers / basic	60-75
Slow flying (park)	50-50

Figure 4: Rough guide power to weight

So, with all that am I any the wiser? Just a bit, but these BLDCs just don't give an instant feel for their power output. I do not need Newtons, just an ammeter to work out my watts, and of course my wife's baking scales, what could go wrong?

Stay right side up.

Note 1

The **gram-force** is a metric unit of force (*gf*). The gram-force is equal to a mass of one gram multiplied by the standard acceleration due to gravity on Earth, which is defined as exactly 9.80665 metres per second². Then one (1) gram-force is equal to 0.001 kg × 9.80665 metres per second² = 0.00980665 kilogram × metre per second² = 0.00980665 newton (1N). [internet extract]

Ref 1 http://www.motocalc.com/tutorial/index.html#overview

Ref 2 https://ardupilot.org/plane/docs/drivecalculator-guide.html

Charger Repair *by Kev Scott*

Introduction

We all love a bit of RC Classified Scotland; it's the aeromodelling equivalent of drug addiction. You start off gently and before you know it, it is taking over your life. "Oh, that's a bargain, I need to have that!" or "Oh, if only I had been quicker, I could have had that – I won't make that mistake again!".

That isn't me though, all my purchases are well thought through and assessed (honest!). It was with that mindset that I bought a used Overlander RC6-VSR from that group. I only had one charger at the time (the same unit) and I thought it would be useful to have a second one, just to get those LiPos recharged and planes back in the air as soon as possible.

When I got to the seller's house though (I was buying other things as well), he had bad news. The charger worked well with 4S batteries but brought up a low voltage error when used with 3S. He also had a second Overlander RC6-VSP that was displaying the same problem.

As I was an electronics engineer in the dim and distant past, I said I would take a look at them and try to repair them. This article is the story of how it went.

The Problem Child

Investigations Begin

Can we Make This Pheonix Rise Again?

I started my investigations with the VSR, the VSP was left until I could progress this one. The first thing I discovered was that the charger would work quite happily with 3S batteries if I selected a mode that didn't need the balance cable, so it quickly became clear that the problem was in that area. Having some clues to go on, I took the charger apart.

As you can see in the picture alongside, there were further clues when I got inside, you can see that there are burn marks at the back of the 3S connector. The connector itself was fine, I could put a multimeter on the outside pin and get a connection though to the other end of the pin on the back of the PCB. That led me to think that the tracks on the PCB had been subject to a high current and had been fused out. Ok, lets now take a brief diversion and discuss how a charger works when it is in balance mode.

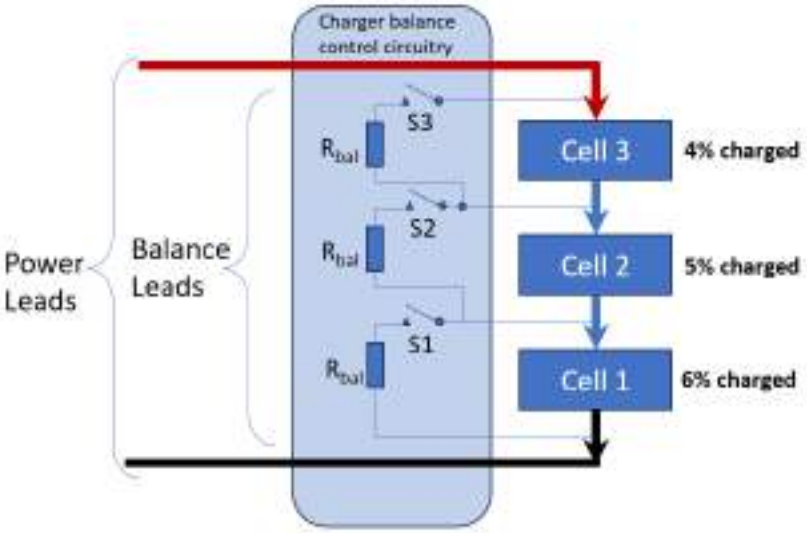
How Balance Charging Works (and Some Life Tips)

Having a balanced lifestyle is very important, drinking in moderation, eating your five a day and regular exercise. Whilst one and two might be a challenge, us aeromodellers certainly get plenty exercise, usually in the west or east field! Lifestyle balance is definitely important, but is it as important as a balanced battery, NO WAY, certain things need to be prioritised after all!

The way that a charger controls the individual cell charge rate is through the use of balance resistors inside the charger. When a particular cell is getting close to fully charged, the balance resistor across that cell is

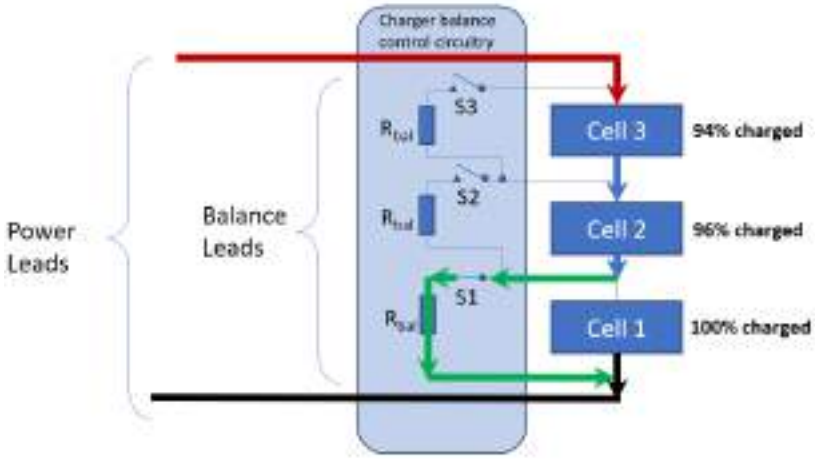
switched on. This causes the current for that cell to be diverted, while the other cells keep charging. We can show this more with an example.

If we take the case of charging a 3S LiPo, and assume it is starting from a low charge state, we get the diagram alongside. Note that each of the cells is starting with a slightly different state of charge (4%, 5% and 6%), but at this point in time the charger doesn't care. The balance lead connections are not used (S1, S2 and S3 are open) and all of the potentially substantial charging current passes through all three cells. The balance leads are still used as a monitor however, looking at the voltage across each of the individual cells. Although we have shown switches here, these in practice would be transistors.



Low charge state

Once the Lipo gets close to fully charged though, we are likely to have a situation where all three cells are well charged, but not to the same amount. We can see in the diagram that cell 1 (100%) is now fully charged while the other two are not quite there yet.

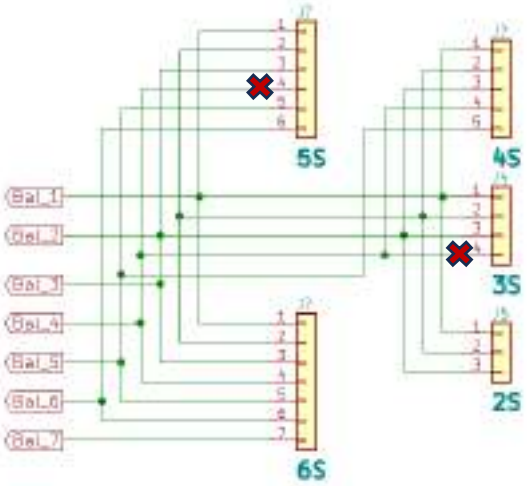


High charge state

What the charger does at this point is to use the balance lead between cell 1 and cell 2 to redirect the charging current back to the charger and through a balance resistor. This means that cell 2 and cell 3 continue to charge but cell 1 doesn't. The only problem with this is the ability of the charger to absorb this current is quite low, and that becomes the limiting factor; you may see your charger start off at say 2.5A charging rate, but it will drop down to say 0.4 Amps when it goes into balancing mode. This process of switching individual cells in and out continues until all of them are at the same voltage.

Back to the Fault Then ….

After reverse engineering the Overlander for a while, it became apparent that the circuit for the balance connectors looked as per the diagram here. The connections on the bottom left go off to the balance resistors and control switches (transistors) that we discussed previously. Notice that all of the connectors are wired in parallel.



Burnt Out Tracks

The two lines shown with a cross on them had been fused out, which meant that neither a 3S battery nor a 5S battery could be used in balance charging mode.

Why has this happened you might ask? I think what has happened is a 5S battery has been charged and the main charging leads have been removed, but the balance leads left connected – it is easy to think in your head that they are only being used for voltage monitoring.

When an uncharged 3S battery's balance leads are then connected, we have a situation where the first three cells of the 5S are connected to the three cells in the 3S. With one fully charged (3 x 4.2V = 12.6V) and the other well discharged (say 3 x 3.75V = 11.25V), we have 1.35V across a short circuit. A current of around 30A (allowing for the cells internal resistance) would certainly take out the PCB tracks very quickly.

Repair in Progress

You might ask why the other tracks weren't taken out as well – the reason is the lower cells in the LiPo would have been short circuited as well, but because the voltage was less, the current would be less as well and the tracks would suffer less heat.

I was able to fix the problem by adding some wire connections to the back of the PCB, as can be seen in the picture. This was then all encased in hot glue to ensure the new connections couldn't be moved.

You will notice that there is a column of black parts on the left-hand side, all with the number 200 on them - these are the balance resistors (20 ohms).

I am sure you are all asking, "Well Kev, that's great you fixed one of them, what about the other one? Are you going to gloss over that then?" I am pleased to report that it also had a similar problem – slightly different tracks had been fused but were fixed by the same approach.

Conclusion

It's always a great feeling when you are able to repair something and get it back into use, rather than it going on a final journey to Kinross Recycling Centre! It also means I now have three chargers that will allow me to get three LiPos charging up at the same time and back in the air sooner.

If you are thinking of undertaking a repair like this yourself, be aware that the inside of the charger does expose live electricity and be sure to follow the safety guidelines in the user handbook. You have been warned!

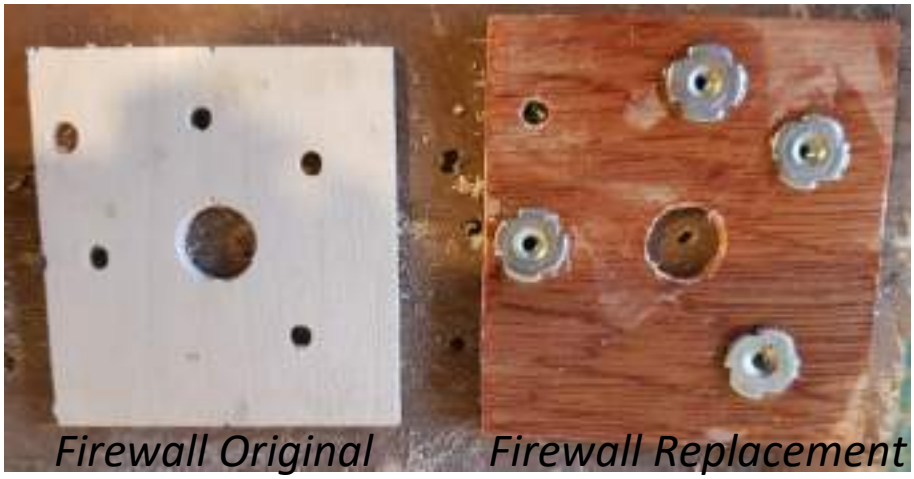
SLEC Limbo Dancer Build *by Neil Grayson*

I bought the Limbo Dancer kit at Elvington LMA in August last year from the SLEC tent. Meeting up with both Mike and Kev who were attending as well. I also bought an Acrowot Kit from Model Shop Leeds on my way back north as well but that is still in its box for now.

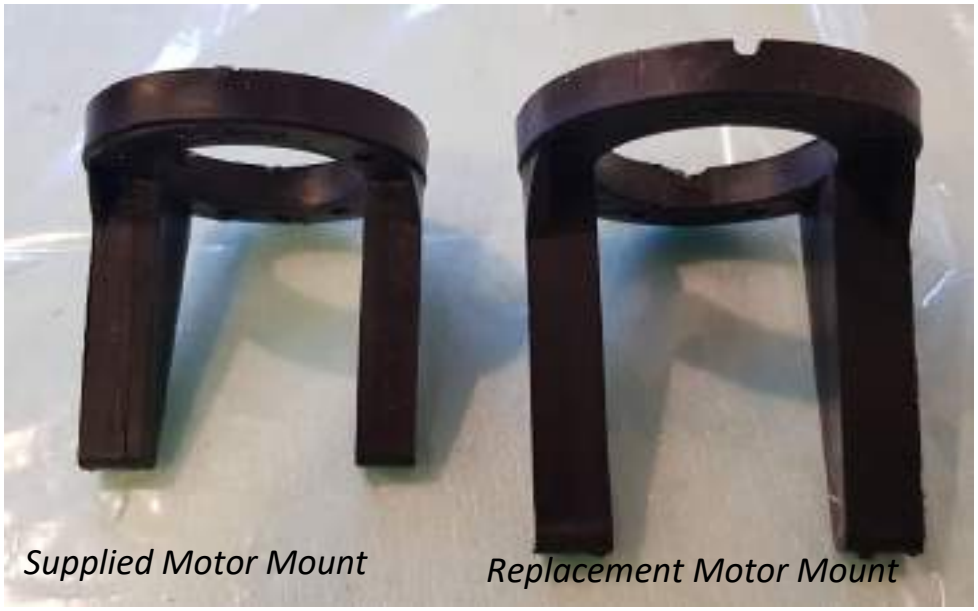
The first thing I noticed was that there were loads of errors in the instruction manual including missed words and incorrect grammar but, regardless everything is very straight forward and the plan is superb. Surely though it should have been proof read or at least updated as the SLEC kit has been available for a number of years now.

Motor Mount

The first thing to do was make a larger firewall with plywood so that I could fit a larger motor mount to accommodate an Irvine 40 or an OS 46 which have the same size mount holes. The issue then was that the front of the plane was wider so the bottom and top sheeting had to be increased in width so the laser cut sheets that came with the kit were discarded. I used a large piece of ply on the bottom for the undercarriage instead of a balsa sheet between two ply sheets.



Firewall Original *Firewall Replacement*



Supplied Motor Mount *Replacement Motor Mount*

The advantage of the larger firewall was that I found I could use a 6oz (170ml) fuel tank instead of the supplied 4oz (110ml). The hole for the throttle control rod below had to be moved further into the corner to avoid the larger tank.

Control System

Both the elevator and rudder use a pull, pull wire system, unfortunately the provided wire is barely long enough so I had to buy more wire. Perhaps I was a bit over generous when measuring the length for the rudder and there may have been enough but I erred on the side of caution.

Laser Cut Parts

The edge of the horizontal tailplane has a part either side, T4, however the left and right were different sizes so I had to cut a new one of the correct size. Perhaps I was just unlucky with my particular kit but it was no problem to make another one out of scrap balsa.

Wing Construction

Spars, leading edge, trailing edge and both upper and lower leading edge and trailing edge sheeting are all 915mm (36”) and the wingspan is 1220mm (48”) so all the parts needed to be spliced together and the instructions gave detailed instruction on how to do this which was very useful. Because the wing is built in one piece it just fitted on my building board with just the tips hanging over. Of course, as I usually do, I fitted the servo tray reinforcing hardwood on the wrong side but it was easy enough to unglue it and glue it back to the other side.

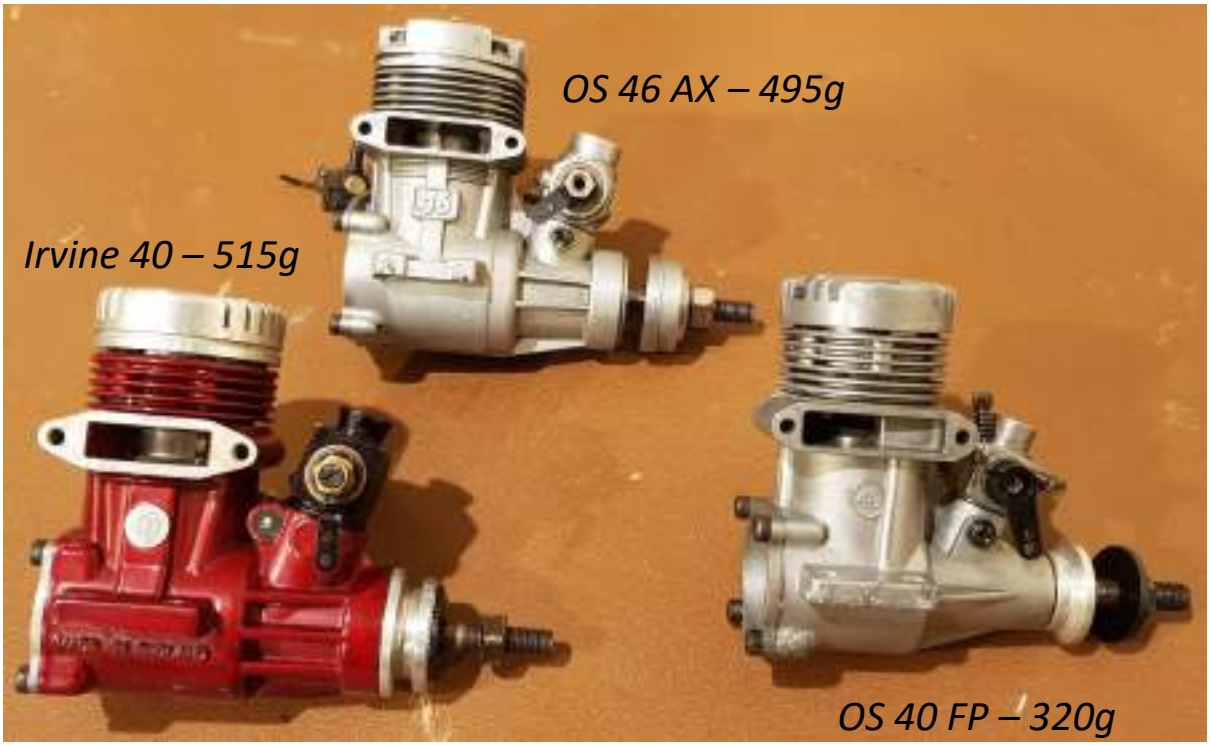
The wing was very quick and easy to construct due to a flat bottomed aerofoil shape.

Covering

I bought some transparent blue MacGregor covering film as it was half the price of Oracover for the same size of 2m. It turned out to be a false economy as when I used it to cover the tailplane it was dreadful to apply. It was very difficult to remove the backing film as it was very thin and it wouldn't all strip off in one piece. It also kept curling up on itself and sticking together which meant that the colour came off and left a clear spot.

Engines

The choice of engine was an OS 40 FP, an Irvine 40 or an OS 46 AX. The heaviest engine surprisingly was the Irvine 40 at 515g which was even heavier than the larger OS 46. After consulting with Dave Kelly who owns a couple of Limbo Dancers he suggested that the Irvine would be the best choice as the nose is very short and would help get the C of G in the correct place rather than having to add a lot of lead.



Flying

The recommended first flight movements on all control surfaces is 25mm each way then for maximum control for competitions and aerobatics 50mm for ailerons and elevator and maximum obtainable for the rudder.

It is also recommended that for the ultimate in performance flaperon mixing is used so that the ailerons act as flaps for tight looping manoeuvres and also to give high lift when gliding.

All that there is left to do is fit the fuel tank, battery and receiver, which I admit is a very tight fit with the receiver sitting on the NiMH battery, I hope reception isn't affected. Just need to wait for the weather to improve. See you all at the flying field.

Complete – Ready for first flight.

Paper Plane Build *by Kev Scott*

What to Fly?

I am in love…

When the indoor flying started, I gave some thought to what would be suitable for it. My initial thought was that the Microaces planes looked great. If you haven't seen them before, they are small laser cut depron planes with really glorious detail on them (please take a moment to visualise me salivating at this point, then again maybe not!). Unfortunately, the wheels fell off my wagon on that one – you need to use their all-in-one receiver which works with DSM2/X, S-FHSS, FrSky D8/D16 or AFHDS 2A; if you understand what any of these things are you are doing better than me, I only get out of bed for ELRS. Nevertheless, this was A Sad Day.

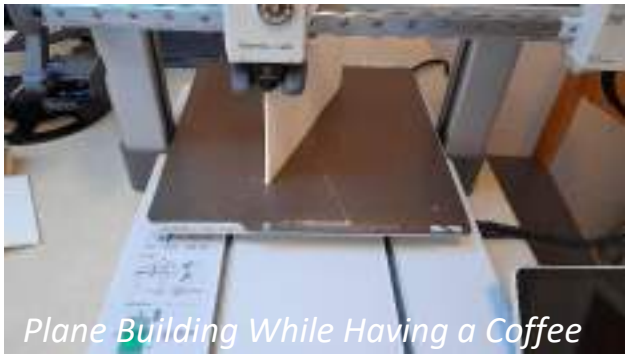
Paper Plane

So, on to the next option. I needed a slow flyer but also thought that something I could fly outdoors as well would be a good choice. The paper plane from Planeprint (it is 3D printed) caught my eye and in the demo video they give, it showed it doing very tight turns. It also has a few unique features like vector control (the motor is on a gimbal controlled by the rudder servo).

Not the smallest plane in the world for indoor flying (500mm wingspan and 360 grams all up weight), but I had already seen the enormous gym hall by this point and thought it would be fine.

OK, decision made, let's crack on……

The Build



Plane Building While Having a Coffee

The build was mainly a case of 3D printing the parts and assembling them together. I have covered 3D printing in earlier newsletters so won't cover it again here. However, the new thing (for me at least) was the use of LW-PLA which foams up in the printing nozzle (think of the head on a Guinness….. OK, now starting reading this article again please!) and results in much lighter parts. I also had a new 3D printer as well so there were a few changes going on at once. Stuart Houston luckily had the same printer and had used the same filament and he very helpfully shared the necessary settings for this.

The print therefore was straightforward and before I knew it, I had 13 parts that just needed locating tabs inserted and then glued together with CA glue. Bob's your Uncle!

Mr Tickle Fights Back

Did I have any problems with the build? Yes, just in one area though. Because the servos are installed in the fold of the paper plane, the standard servo arms are not long enough. To sort this, the design comes with extension arms (think Mr Tickle, but straighter) that you can print and glue onto the existing arms. The first problem I came across was the extension arms had too small a hole in the middle, I couldn't get them onto my 9g servos. To get around this, I redesigned them in Fusion to allow for a larger hole. The other problem was that the design suggests gluing these on to the original arm using CA glue; I tried this but found that the joint would not hold. The arms look like they are made of nylon and the CA was certainly not loving it. I sorted it by judicious use of two-part epoxy.

The elevons were easy to set up although the 60mm deflection might come as a shock to some, they certainly did to me!

Maiden Flight

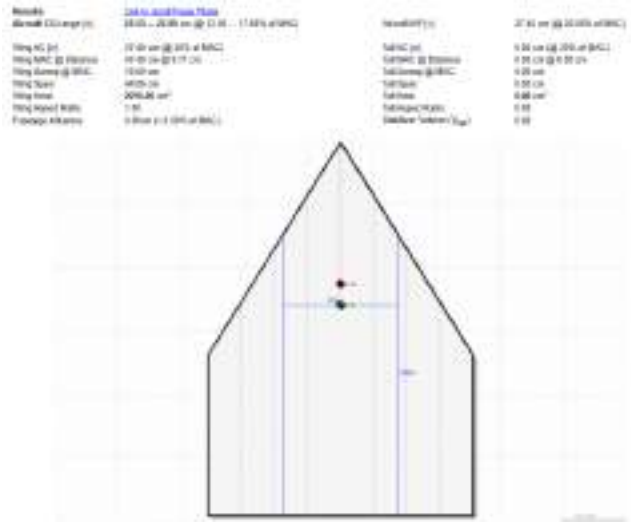
First flight was at the (inaugural) January 25 indoor event. It was pretty clear from the outset that the plane was tail heavy. The rates had also been dialled down to 50% as well and it became clear that the full travel was needed.


School of Hard Knocks

So next flight was at the field with the full rates but with the CofG still where the design had asked for it to be. The thinking was that with a bit more speed (and space) it might be a success but again the tail heaviness was apparent.

I contacted the designer (René Marschall) at this point explaining the flight characteristics but his answer was that he would really need to see a video of it to comment further. He did say that the weight of the plane was good, as was the prop and motor that was being used.

C of G Adjustment (and No Substitute for Cubes)


eCalc, Calcing

It was still difficult to get away from the CofG position being wrong. I entered the shape of the plane into eCalc that I use quite a lot and it came back with a CofG range of 21.5cm to 23.9cm which was encouraging, as the design CofG was at 24cm.

I decided therefore to move the CofG to the forward of these two points. Using summation of moments (see previous newsletters), that told me that I would have to add 40 grams of weight to the front and that is what I did.

I also felt that a more powerful motor would certainly not do any harm, so I changed the SunnySky X2302 KV1650 to an X2304 KV1800.

With those set of changes applied, the plane flew great (with Stuart Houston at the controls). His feedback was that the vector thrust was very effective but it would be better if it could be mixed in with the aileron control. We did that in the mixes screen on the TX12.

All in the Mix!

Conclusion

The main thing I learnt from this is that things don't always fit straight out of the design – be prepared to adapt them as needed. That's it, short and sweet!

For Sale

Transmitter for Sale

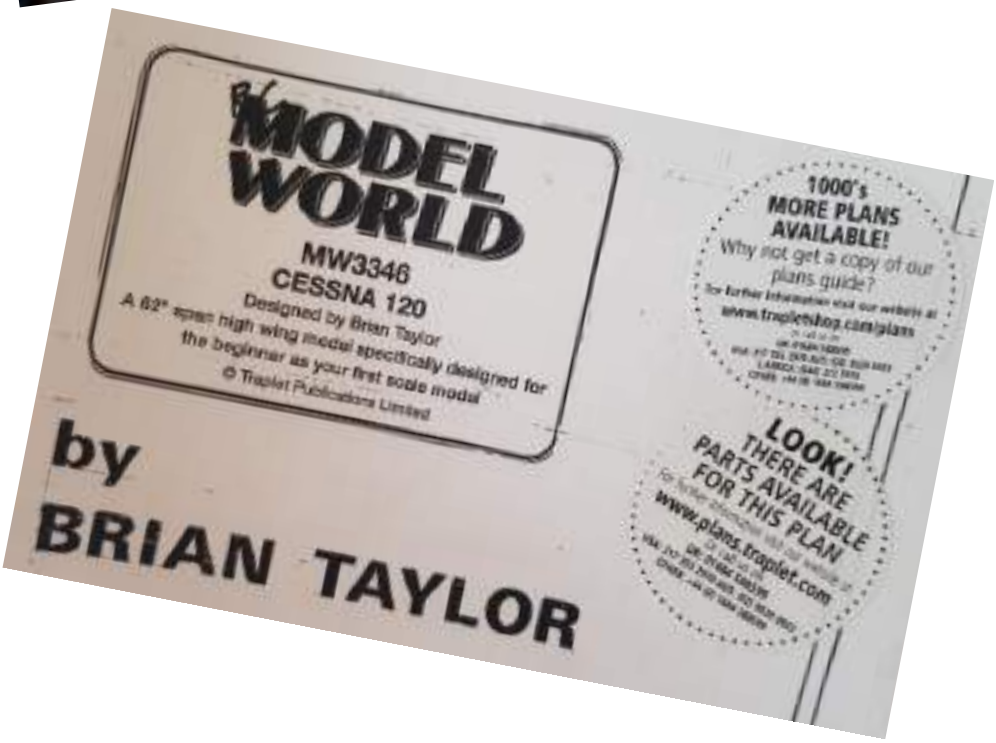
Hitec Aurora 9 2.4Ghz AFHSS Adaptive Frequency Hopping, Spread Spectrum Transmitter for sale. Richard Blanski bought it for a spare but has never used it and is asking £75 including the battery and manual. Excellent condition with no damage. Contact Richard on email at: r.blanski@dhkk.co.uk

Free Planes

Neil Grayson and Mike Hill visited St Andrews recently and picked up a couple of planes after the owner sadly passed away. His name was Gordon Ball, if anyone knew him.

The first one is a Hobby King Cloud Fly powered glider. It has a wing span of 1280mm and takes a 3s 2200mAh LiPo battery. There is no receiver installed.

The other plane is a part built 62” span Cessna 120 designed by Brian Taylor. As can be seen the fuselage is almost complete and all that needs building is the wings. The full size plan is included with the fuselage. Traplet is now Sarik Hobbies and wood packs are still available. An excellent winter project for someone.



Contact Neil or Mike if you are interested in either plane.

For Sale: DJI Mavic 3 Classic Drone.

It comes with a storage box, 1 batteries, spare propellers, filter, charger and cable plus a controller. The controller shows how many flights have been completed over the past 2 years which as you can see is pretty light. It has never hit anything or crashed so is in excellent condition.

DJI Mavic 3 Classic - Link

The camera is a Hasselblad 1 inch CMOS with 3 x Zoom in video mode. It has 8 collision sensors so it is almost impossible to hit anything unless you switch to Sport Mode. It weighs 890g, is fun and easy to fly and Ewen is willing to teach the buyer how to use it properly if needed.

Contact Ewen MacKenzie at mackchilli@outlook.com £850 no offers.

For Sale: Seagull Ultimate 120

Stuart Houston has got a Seagull Ultimate 120 with digital Savox servos fitted and a Stinger 20cc petrol engine with electronic ignition. He has also fitted spats and a brand new aluminium spinner. See pictures. He is offering it to club members for £150. Stuart says that he is selling as it's too big for him to transport. The wings do come off in the centre. Contact Stuart on flightsoffancy356@gmail.com if you are interested or if you require more pictures.

Activity at the Field – January, February

Wednesday 8th January

Not strictly an 'activity at the field' but the first indoor session at Loch Leven Community Centre which was well attended by both KRMFC and Balbedie club. Organised by Kevin Scott and Bill McDiarmid, well done. It was quite difficult to avoid the walls in such a restricted space but a lot of good flying was achieved. Neil Grayson managed to get Craig McVeigh's Slow Ultra Stick stuck in the netting on the right-hand side of the hall but luckily it wasn't too high and a couple of taller members of the club managed to retrieve it.

The indoor event will be held on the first Thursday of each month between 20:30 – 21:30.

Sunday 26th January

Storm Eowyn on the 24 January caused chaos at the flying field tossing around the benches and moveable pilot boxes. Luckily there was no permanent damage. Neil Gourlay and Mike used a couple of 8" nails and they were as good as new.

Saturday 1st February

Today the flying field had a great turnout with most of the flying taking place from mid-morning to around 2:30 when it turned a bit cold and breezy. Neil Grayson, Bill McDiarmid, Paul Duffy, Stuart Houston, Kev Scott and Gordon Frost were all in attendance.

Unfortunately, before flying could take place Bill McDiarmid had to go round with a spade and flatten all the molehills. We all like a bit of nature but not when it holds up our flying! Did anyone play Whack-a-Mole in their younger days?

Stuart Houston had two small extremely well-made planes to fly, one a Guillows Spitfire. Both flew superbly. Gordon Frost flew his Aerobatic 330SC plane to good effect doing prop hangs and other complex manoeuvres. Kev and Stuart flew Kev's paper plane successfully with this visit to the field as previously it has been difficult to get the C of G correct. Paul Duffy had a lot of flights with his foamie pusher.

Believe it not dear reader all the flights were successful and without any drama. Neil Grayson had a lot of trouble getting his Enya 40 on the SLEC Fun Fly to start and put it down to a fuel feed issue but did eventually get it airborne very successfully but only once as it refused to start again. More investigation required, I think.

There was also a bit of engine testing taking place with Stuart Houston helping Kev Scott get an Evolution 61 running – bought on eBay for £8.70, which ran great!


Stuart


Stuart


Paul


Kev's eBay £8.70 Evolution 61


Kev


Neil


Paul

Sunday 2nd February

Some photos from today at the field. Mike, Billy and Neil Gourlay all had flights. Billy and Mike both had a flight with their planes as well as flying their helicopters. It must be said that all models went back into the cars in one piece. Including both of Mike's models!

Thursday 6th February

This evening was the second occasion of the indoor event at Loch Leven Community Centre. The time has now been moved permanently to 20:30 – 21:30 but still on the first Thursday of the month. The number of attendees had increased even further and there is even a video available to see at KRMFC Facebook

Another plane got stuck in the netting this month by a member from Balbedie but this time it was higher up and assistance was required to get it down with a large ladder.

Sunday 23rd February

The wind was blowing at 18mph and gusting to 31mph but there were still some brave souls flying at KRMFC. Stuart Houston was flying his Thing at considerable speed which totally ignored the wind, Kev flew his new and much improved High Hopes, Mike Hill took his Synergy N5C helicopter to the skies with no trouble at all and just to rub it in when the wind reached its peak Bill McDiarmid took to the air with his Multiplex Easy Star pusher glider.

If you want to see Stuart's Thing flying at speed there is a video on the clubs Facebook page.

Amazingly with the high winds very little damage to report apart from a dislodged motor mount on the high hopes and a broken wing tip on Bill's Easy Star which just adds to its well-used look.

Web Links and Shops

Some useful links below. If you can suggest any other shops or websites, please send me the details.

Al's Hobbies - https://alshobbies.co.uk/ Located in Milton Keynes. Often appears at model shows

Elite Models - www.elitemodelsonline.co.uk Located in Sittingbourne, Kent. 30 years' experience.

TJD Models - www.tjdmodels.com – Located in Dartford, Kent. Largest model shop in the South East.

Model Shop Leeds - www.modelshopleeds.co.uk/

Wheelspin Models - wheelspinmodels.co.uk. Free postage for orders over £100

Sussex Model Centre - www.sussex-model-centre.co.uk

The Vintage Model Company - www.vintagemodelcompany.com

Kings Lynn Model Shop - www.kingslynnmodelshop.co.uk

Scoonies - www.scoonie-hobbies.co.uk. Don't bother with the website. Visit the shop in Kirkcaldy. 87 St Clair St, Kirkcaldy KY1 2NW. Tel No: 01592 651792

Dens Model Supplies - www.densmodelsupplies.co.uk. Excellent for spares for vintage Cox engines.

WestonUK – www.westonuk.co.uk Good value fuel in large quantities. Over 20 Litres (4 Gallons) gives you free postage.

ACCU – www.accu.co.uk. Excellent for bolts, screws and washers. Will take requests for bespoke items.

RCM&E - RCM&E Home Page. The website of the best aeromodelling magazine. If you have a question the forum is bound to have an answer.

RC Thoughts - https://www.rc-thoughts.com/ Finnish website of Tero Salminen. Phoenix Simulator Downloads and updates.

RC World - www.rcworld.co.uk. Located in South Wales between Cardiff and Newport. Stock values on each product are displayed which reflect what are physically in stock, not held at a supplier's warehouse. Derek Grater has used and recommends.

Carbon Copy - Carbon Copy (carboncopyuk.com). Located in Stevenage. A wide selection of Carbon and Fibreglass parts. Ideal for undercarriages, cowlings and canopies.

Just Engines - https://www.justengines.co.uk/. Located in Shaftesbury, Dorset. A wide range of engines and spares. If you can't find what you want on the website send them an email or call.

SLEC Manufacturing (Sun Lane Engineer Company) - SLEC UK Ltd. A good range of accessories but also a large range of balsa and hardwoods. Also available is a laser cutting and CNC milling service.

Component Shop - Home page (componentshop.co.uk). Based in North Wales. A great range of batteries, leads and electronics.

Flight Plan Models - Flight Plan Models Online UK. Based in Tamworth. Bespoke RC Plane Accessories. I find them a little overpriced but they have interesting stuff.

4-Max – 4-Max Home. The Fixed Wing Electric Flight Specialists. They will advise you what electric motor to use when converting from IC to electric.

Here's a link to the glider field weather station data at Portmoak gliding club which is just a few miles east of our field. It gives a lot of information. ***Portmoak Weather Station***

Events for 2025

Loch Leven Community Campus Indoor Flying

Muirs, Kinross, KY13 8FQ - large sports hall

First Thursday Each Month 8:30pm – 9:30pm

Falkirk Model Flying Club Fly-In

Sunday 13th July 2025 at 10:00

Loch Leven Waterplanes

Saturday 16th & Sunday 17th August 2025

Here is a list of static scale model shows in Scotland being held this year if you are into that sort of thing (can't see the point myself if they don't fly but I suppose they last longer!).

Scottish National Scale Model Show

Dewars Centre Glover Street, Perth PH2 0TH

Date: Saturday 26th - Sunday 27th April

Adults £10. Children Under 16 Free

Fife Scale Model Show

Cupar Old Parish Centre, Short Lane, Cupar KY15 5EQ

Date: Saturday 14th June. 10:00 – 16:00

Organised by East Neuk Model Club.

Prices not advertised, could be free

Dundee Model Show

Boomerang Community Centre, 10 Kemback Street, Dundee DD4 6ED.

Date: 2nd August:

Adults £5 Under 16 Free