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LMFC NEWSLETTER

A summery sky over our flying field and a good turn out in the pits.

Content

Editorial

by Ernest Harrison

A long enforced absence from flying ï I still haven't got full mobility in my right leg following spinal surgery ï has made me realise the extent to which my past editorials have been based on "current affairs" and recent "not gossip"

When I visited the field as a spectator I was pleased to see a fair number of new members, some of whom were showing signs of frightening competence. The runways looked in good order and all the grass had been cut so the view from the pits was excellent

The incident book had a few choice new entries too!

It took this visit to make me realise how much I had missed my hobby and the company of lots of like-minded enthusiasts.

We had a committee meeting in September and this was a very useful "catch-up" for me since we discussed many of the issues affecting the club at present.

As I compiled this newsletter the 50th anniversary dinner was just a day away and I was looking forward to an evening out with fellow club members and their spouses. Knowing there is a new caterer at the Oxshott Village Sports Club I was hoping he will be as good as Margaret who catered for our last 2 club dinners. Note. As a result of publishing the wrong date in the last newsletter I failed to turn up on the right night and missed an excellent dinner! No one else seems to have noticed this mistaken date ï does anybody else read this newsletter?

Laurence Naylor has purchased the DVD of the recent Avro Vulcan restoration and first flight. This is a first class production and he is willing to make it available to members for a minimum donation of only £2, to go to the Vulcan project from the Club.
If you are interested please contact Laurence who will arrange a loan schedule. On completion he will produce evidence of the donations, confirmed by Ted, and then send a Club cheque to the Vulcan project.

Hopefully, see you at the field in the near future.

Chairman's Meanderings

by Ted Dalley

The outfield, which our friend at the council said would be mowed in July, was actually cut at the end of September. I have thanked him and reminded him that he has not yet contributed to the cost of patching the access road as promised. Better late than never as we say.

This is also true of the recent spell of spring like weather. On a recent Sunday we had 20+ cars in the car park, something of a record, I lost count of the number of models, but we had a very good air show Shame about the summer - in general the weather has been awful for flying.

The number of accident reports does not seem to tally too well with the number of 'firm' landings. Please make an effort to fill them in: the green folder in the shed contains pen and suitable paper.

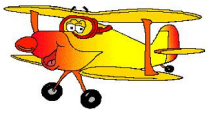
It is gratifying to see that several aircraft which suffered extensive damage have been repaired and are flying again. Who says we are a throw away society? Richard has his computerised cutting machine up and running: the resulting bits still have to be assembled and glued by hand however.

Recently I did a spot of analysis on a couple of electric motors and found that the quoted revs per volt were down by about 20%. This emphasises the need to use the Wattmeter on all new installations. Burning out batteries and speed controllers is a very expensive way of creating smoke trails.

Flushed with success in obtaining a spot of grant money towards the cost of our new mower, we set off in pursuit of lottery money for our new shed. We fell at the first hurdle. The lottery requires a reasonable length of lease but our agreement is currently only for one year at a time. The Council agreed in principle to extend our agreement with the proviso that we pay the legal fees for drawing up the new agreement. So, to get best value for your hard earned subs, we asked whether the new agreement could include extended flying hours. Again this was agreed in principle. However, the written version just received offers rather less than we were hoping for. To be continued.....

I look forward to our anniversary dinner. Is the club really that young? Since we have recruited a number of new members this year perhaps life really does begin at 50.

CU, Ted



From the Secretary's Cockpit

By David Snape

OK, Iôm convinced.
Electric Flight is wonderful and we can throw away all our nasty, oily, IC engines.
Well, maybe not just yet.
There is the small matter of buying enough batteries to give me more than a couple of flights a day, and buying a better charger, and the lack of that satisfying engine noise.
But certainly converting a trainer to electric has been a technical success and it flies just as well as it did with an OS40, so it can be done!

Perhaps this nicely illustrates the differences in why people get involved in the hobby. Some view it as a sport to be mastered, to compete and win etc. Some people, like me, enjoy the technical challenges involved in making something fly, and problem solving. Others are more interested in creating something that looks good or realistic. I hope we can accommodate all types at our club. By the way, as per the new club guidelines, I got my electric conversion checked-out by other more experienced members, and test flown before I took it up. Thanks Ted and Dave.

It has been encouraging to see several new members this year, welcome! And hereôs hoping you enjoy many hours of fun, flying at the Leatherhead field in the future.

The web site has gone live since the last newsletter, and thanks to Bobby Abraham for all his hard work. We now have a slick, easy to navigate, information-packed site. We need to keep up the interest and make sure the content stays current and topical. If anyone has any interesting information, photos, or ideas on how it can be improved, please let us know. If you havenôt seen it yet, just click on http://www.leatherheadmfc.org.uk

The October edition of the South East Area Digest of Gen (Seadog) has just arrived, and I can let anyone have a copy if they want to see it. One little snippet I noticed was: ñAn airprox ï near-miss to you and me - was reported concerning a model helicopter and a full size on approach to Stansted Airportò
It beggars belief as to what the model flyer was thinking!

Iôll bet Graham is glad he doesnôt have to chase-up that particular incident report.

Avoiding the dreaded ñglitchesò

by Geoff Bignold

There is no doubt about it, electric models are more vulnerable to radio glitches than are gliders and IC models. They are all are equally exposed to the effects of microwave beams, mobile ôphone transmissions and of thunder and lightning anywhere within about 50 miles range. The difference appears to be that the electric drive system creates an electronically noisier environment in which the poor receiver has to work.

Is there a single answer to the problem? Is a PCM receiver essential? Can shielding or adding a ferrite ring help? Are there other options?

It would be great if we could stop the local electrical noise from the motor and ESC getting into the receiver in the first place. There are a number of possibilities to consider:

Obviously, unwanted signals getting in via the aerial can be minimised by routing it as far away from the motor and ESC as possible. Clearly there is also a risk of signals from the ESC being fed in along the connection that supplies power to the receiver and sends the control, signal back. Some ESC manufacturers include a ferrite ring on the lead to the receiver to suppress radio frequency signals passing into the receiver via this route.

I noticed that modern brushless motors have coils connected in an array that has no connection to the motor body. This raised the question ñWhat would happen if I earthed the motor body to the battery?òI have tried this (I connected the motor body to battery negative). This appeared to be quite a good step to take. During the next dozen flights I only noticed three or four glitches, most of them very small ï clearly an improvement but not the whole solution.

The BMFA handbook suggests that interference from microwave beams is introduced directly into the receiver rather than via any of the connected wires. The advice given is to wrap vulnerable receivers in aluminium foil. I have tried this (again earthing the foil to the battery negative) but I have not found any very convincing benefit; perhaps the receiver that I was using is not very vulnerable to this source?

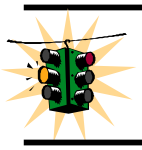
Once we have done everything that we can to keep the unwanted signals out of the receiver, it is a good idea to use receivers that are capable of dealing with what is left. Ernest told me of his good experience with Schulze.
On the Internet I found an excellent article on ñModern RC Receiversòby Mike Redmond and Rod Badcock (www.srcmc.co.uk/docs/receivers.pdf).

This article explains the considerable advantages of these receivers. They are PPM single conversion devices but they include digital signal processing (DSP) to prevent rogue signals reaching the servos and to enable a failsafe facility. DSP receivers are also available from Hyperion, FMA, JETI and perhaps one or two others. The makers of these receivers appear, at the moment, to be way ahead of the big RC equipment suppliers in this part of the market. Certainly, they all seem to be selling their products as quickly as they can make them. After trying all of the other measures, I changed to a Schulze receiver and can confirm that its performance bears out Ernestôs recommendation.

If we stick with the larger manufacturers, changing to 35 MHz PCM receivers offers similar benefits and I expect that making the jump to 2.4 GHz should get right away from the problem.

My short list for avoiding glitches when flying electric models offers no surprises:

1) Do as much as possible to keep electrical noise out of the receiver (layout, ferrite rings, earthing, and perhaps shielding).
2) Use a receiver that has the ability to cope with any noise that does get through (i.e. PPM with DSP, or PCM, or 2.4GHz).



SYNTHESISED TRANSMITTERS AND MOBILE TELEPHONES

By Graham Bentley

Following the crash of an expensive gas turbine model helicopter, the investigation into the cause revealed that the synthesised transmitter being used to control the helicopter was interfered with by a nearby mobile telephone. In this case it was a Multiplex transmitter but it is possible the same could occur with other synthesised transmitters.

The transmitter manufacturerôs instructions were scrutinised and found to contain a warning that mobile telephones were not to be used within the direct vicinity of the transmitter and subsequent trials revealed that the incident was repeatable with that transmitter. The UKRCC will be carrying out further investigations to determine the extent of the problem and will be advising in the future.

The BMFA already recommends that mobile telephones are not taken into the pits or flying area for other reasons but be aware that **mobile telephones could interfere with synthesised transmitters.**

Important News
From Stuart Tucker

You will all by now have received your October copy of BMFA News. Included in this issue is a ballot form for the election of FOUR candidates for the BMFA Council - three for the Free Flight Technical Committee and one for the post of Records Officer.

In the past the responsibility for filling in this form was that of the Club Delegate which was myself up to 1999 followed by Mick Saxton. This meant that each CLUB had a vote. However, three years ago the rules were changed to allow every BMFA MEMBER to have a vote in respect of the various posts which became vacant and these are now ratified at the BMFA Annual General meeting held at Coventry each November.

May I urge all of the Leatherhead members to fill in the ballot form and return it to the Independent Scrutineers as soon as possible. Last year this meant cutting the appropriate form out of the BMFA News and posting it. This year there is a separate ballot form enclosed with the BMFA News on which postage has already been paid. Therefore there should be no excuse for not returning this ballot form.

It does not matter if you do not know any of the candidates personally. You will find their CV's on Pages 27,28 and 29 and by reading these you should be able to decide whom you would like to see elected, although I agree that some of the CV's are a bit sparse in detailing the prospective candidate's agenda.

Neither does it matter if you are not personally interested in Free Flight competitions. What should be remembered is that all these candidates for posts on the BMFA Council are volunteers and we owe it to them to spare a little of our time to decide whom we think is the best choice.

Closing date for this ballot form is 10th NOVEMBER 2008.

Results of the election and a report on the Annual General Meeting should appear in the December edition of BMFA News.

All aviation-based projects were put on hold earlier this year as I embarked on a slightly different build venture. Of course the Internet was completely to blame, and once I had the set of plans in my hand this had to be built. I had a little CNC experience back from my school days where we had a small computer controlled lathe; however, I thought the prospect of having my own 3-axis mill would open up all sorts of avenues, in the RC modelling world and beyond.

Needless to say this is tried and tested design, originally conceived by a guy over in the States (not familiar with the metric system). In addition to converting the plans to sensible units, I also made a few customisations and additions of my own. On paper, the specifications seem impressive. The cutting area is about 550mm X 750mm (x and y axes), with around 80mm movement on the z axis. Using the components I selected, the machine can órapidô(the fastest movement possible) at 1100mm/min on each of the three axes with a resolution of 0.00125mm! Donôt read too much into this though, since the accuracy is somewhat less than that given the cheap components that are used throughout the construction.

Construction

The key concept behind this design (and there are other variations out there too) is that all, well most, components are available from high-street hardware stores. In my case my employerôs skip proved quite fruitful in the plywood department, or órecyclingôas I call it! Metal components are a combination of aluminium standard size channel sections, and chrome tubing. The main cost saving over a commercial machine is the use of cheap threaded rod rather than purpose-made leadscrews. Iôve used M8 threaded rod, which has a pitch of 1.25mm. This means that 1 revolution at a stepper motor gives 1.25mm of movement. The bearings (all 41 of them!) are those used on skateboards, so again are relatively cheap and easy to obtain. Iôve also made extensive use of HDPE sheet, which is fairly pricey but nice stuff to work with.

Concerning the electrics, the stepper motors, power supply and driver board were all obtained from a supplier in the States (the PSU being 110/230v switchable!) I also built some additional circuitry to implement limit switches on the extents of each of the axes, and switch the router via software control. The router itself is a Trend T4, which is at the more powerful end of the trim router market. It has a 1/4ö collet so accepts all standard bits, and has a variable speed control. The best thing about it is the price, at about £65.

The main variation I made from the plans was the integral base unit. I fitted castors to the back which enables the (rather large) machine to be stored vertically. It also houses the PSU, driver board and other circuitry neatly in the same unit, making the machine óself containedô The only connections to the outside world are a parallel cable (remember them?!) and a mains lead.

Software

The machine is operated by the rather wonderful Mach3 controller software, which uses industry standard óG-codeôcommands to control the movement of the axes, plus performing other functions like homing (setting the origin) and triggering the router power. Itôs also possible to ójogôthe machine under keyboard control, with the axis positions being displayed on numerical readouts on the PCôs screen.

So whatôs involved in chopping out fuselage formers or wing ribs for a model? The starting point is a CAD model ï in fact there are a multitude of plans that can be downloaded (in some cases FOC) from the Internet. Anything in Autocad or DXF format will do nicely, although it is of course also possible to convert a paper plan with a flatbed scanner and a lot of patience! G-code fundamentally only supports straight lines and circular arcs ï anything else has to be coded as a series of ósteps ô So while for simpler parts (see photo) itôs possible to write the G-Code from scratch (which, incidentally, also can result in a more efficient program), anything more complex like a wing rib will require conversion software. And I have just that ï an application that converts CAD drawings into G-code, which Mach3 can interpret. A wing rib is therefore approximated to a series of short arcs, so what might seem like a simple part may actually become several hundred G-Code commands.

With the correct program loaded into the system, itôs then just a case of clamping the work piece to the machine bed (with protective material underneath) and hitting the magic green ógoôbutton.

Then itôs time to sit back with a cup of tea as the machine (rather noisily) does its thing. Interestingly, some of the first components I made were parts for itself such as better stepper motor mounts.

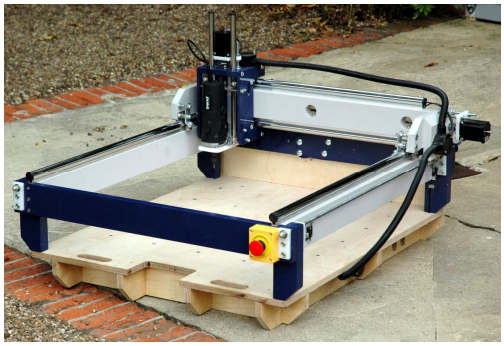
Thereôs something a little sci-fi about thaté

In conclusioné

Well itôs been a lot of fun, and Iôve certainly learned lots from the experience. Thereôs probably as much enjoyment in building the machine as actually doing anything particularly useful with it, a little like building planes and then choosing to fly them I suppose. Itôs certainly not perfect, the main issues being the lack of speed and power. Being of wooden construction, things start to bend if you work it too hard. So while it will never machine aluminium, for woodwork and other softer materials like plastics itôs certainly up to the job. The main problem I currently have is the backlash in the leadnuts on each of the axes, so this is currently an area Iôm looking to improve. I have some aircraft to complete first thoughé

All sensible requests for parts for your model builds are considered. Just drop me the plans (ideally as a DXF file), or dimensions to be cut.
Oh, and the wood!

For more information see www.cnczone.com for a whole plethora of DIY creations from around the world.
Thereôs more information on my particular build at
http://www.cnczone.com/forums/showthread.php?t=55512



The finished product.

Some formers, ready to use.

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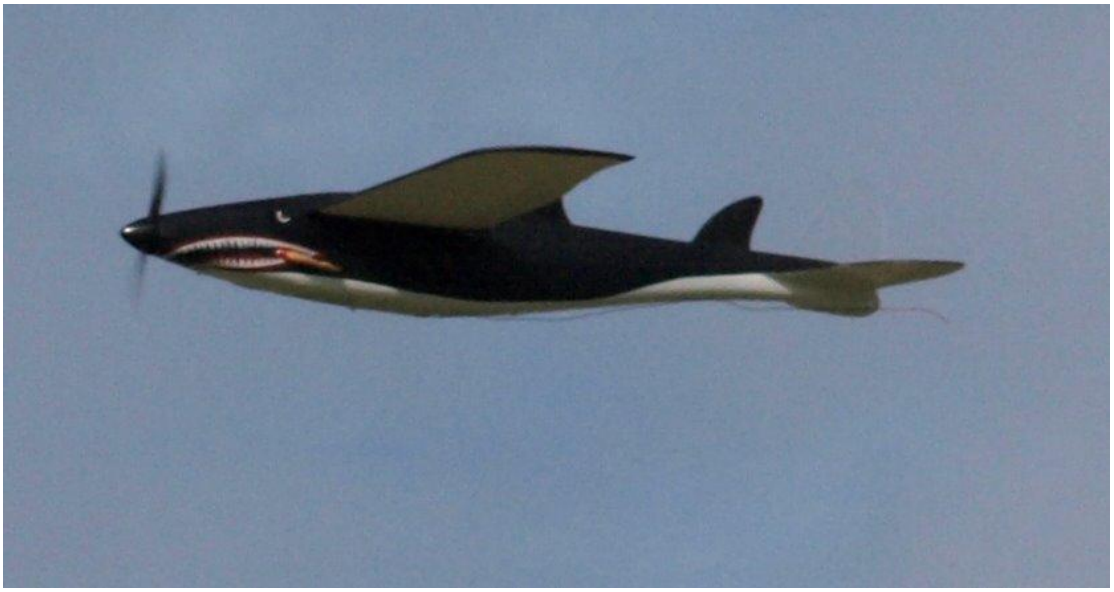
Pictures Page

The summer BBQ and, yes, the sun is shining.



Just when you thought it was safe é Mike Austinôs beast on patrol.

The views expressed in this newsletter are those of the contributors and not the official opinion of the LMFC unless otherwise stated.