Newsletter 423 – November 2019

AEROMODELLERS
NEW SOUTH WALES

Corinne Pellett's Super Cub with a Carbon Cub and Aerosport 103 Ultralight in the background.
Seen at the 2019 SRCS General Fly-In & NSWSAS Scale Rally at Gunderman

Photo via John Considine (NSWSAS)

Contents

Diary Notes

Next Aeromodellers NSW Bi-Monthly Management Committee Meeting.
Friday 13th December 2019, 8:00pm at **Dooley's Waterview Club, Cnr of Clyde Street and Silverwater Road, Silverwater.**

Following Aeromodellers NSW Bi-Monthly Management Committee Meeting.
Friday 14th February 2020, 8:00pm at **Dooley's Waterview Club, Cnr of Clyde Street and Silverwater Road, Silverwater.**

Newsletter #424 (December 2019) deadline for submissions: **Monday 16th December 2019.**
Note: There will be no Newsletter in January.

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AEROMODELLERS NEW SOUTH WALES

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Aeromodellers NSW 2019/20 Calendar

(**Compiled 29 November 2019**)

Unless otherwise advised Aeromodellers NSW Meetings are held the 2nd Friday of every other Month.

December 2019				
1	Wings over the Regatta Centre	Penrith	Tim Nolan	0412 173 440
1	Pylon Racing at Marulan (TBC)	Marulan	Peter Kearney	0407 013 230
1	Gosford City Float Planes	Kariong	Jaz Cooper	0411 053 339
1	Gosford City Indoor Flying (1-5pm)	Niagara Park	Jaz Cooper	0411 053 339
13	**Aeromodellers NSW General Mtg Dooleys Waterview**	**Silverwater**	**Tim Nolan**	**0412 173 440**
15	Gosford City Float Planes	Kariong	Jaz Cooper	0411 053 339
29	Wings over the Regatta Centre	Penrith	Tim Nolan	0412 173 440
29	Gosford City Float Planes	Kariong	Jaz Cooper	0411 053 339
January 2020				
12	NSWPF Precision Aerobatics (CVRCMAS)	Camden	Alastair Bennetts	0439 480 793
25-27	40th Armidale Sailplane Expo	Armidale	Hutton Oddy	0425 285 758
February 2020				
14	**Aeromodellers NSW General Mtg Dooleys Waterview**	**Silverwater**	**Tim Nolan**	**0412 173 440**
15-16	NSWPF Precision Aerobatics (SMFC)	Shoalhaven	Alastair Bennetts	0439 480 793
22-23	Orange MAC Annual Banjo Patterson Scale Rally	Borenore	Steve Smedley	0418 577 834
	Check out the 2019 Banjo Patterson Scale Rally at https://www.youtube.com/watch?v=M_4qCwOVhgU&authuser=0			
March 2020				
7-8	Hunter Valley Champs	Muswellbrook	Cory Eustace	0429 090 686
14-15	NSWPF Precision Aerobatics (QMAC)	Queanbeyan	Alastair Bennetts	0439 480 793
April 2020				
18-19	NSWPF Precision Aerobatics (CKSMAC)	Richmond/Pitt Town	Alastair Bennetts	0439 480 793
May 2020				
16-17	Veterans Gathering	Muswellbrook	Cory Eustace	0429 090 686
16-17	COMSOA Scale Funfly	Maitland	Jason Russ	0414 505 212
16-17	NSWPF Precision Aerobatics (SRCS)	Gunderman	Alastair Bennetts	0439 480 793
June 2020				
20-21	NSWPF Precision Aerobatics (RFC)	Newcastle	Alastair Bennetts	0439 480 793
July 2020				
18-19	NSWPF Precision Aerobatics (CVRCMAS)	Camden	Alastair Bennetts	0439 480 793
August 2020				
15-16	TARMAC Scale Rally	Tamworth	Richard Exler	0438 314882
September 2020				
12-13	NSWPF Precision Aerobatics (GDA)	Gunnedah	Alastair Bennetts	0439 480 793
October 2020				
17-18	NSWPF Precision Aerobatics (CKSMAC)	Richmond/Pitt Town	Alastair Bennetts	0439 480 793

November 2020

14-15	NSWPF State Champs (SMFC)	Shoalhaven	Alastair Bennetts	0439 480 793

The F4C entrants at the 2019 New South Wales State Scale Championships await their next Round. John Considine's P-47, Bill Mansell's Spacewalker, Alf William's Tiger Moth & Graham Harrod's winning Harvard.

Mass launch on the flight line at the Fourth Annual Australian F5J Trophy held at the Aeromodellers NSW State Field, Cootamundra

Club News & General Interest

John Considine – NSWSAS

2019 New South Wales State Scale Championships

Following a previous bad weather postponement the State Scale Championships were finally run & won at the City of Maitland Society of Aeromodellers (COMSOA) field at Metford on the 12th and 13th of October.

Unfortunately rain on Saturday meant that we had to do our best to sneak in competition flights between showers but despite this, some scores were recorded to give us a head start for Sunday in case we had to run the four categories all on one day.
The wind was generally low although some competitors managed to fly in zero wind depending on their luck and although the COMSOA club's excellent facilities include a cross strip very few competitors chose to use that option. The final results are included in the scores tables. Fortunately there were few models damaged and the flying was of a high standard.

Graham Harrod prepares his flying only entry, a TopFlite Corsair. His F4C winning Harvard is behind.

One unusual model, not for its construction or origin but for its engine, was Andrew Hunter's Gee Bee Sportster. Andrew has created a three cylinder, spark ignition, four stroke radial engine using the 'top-end' assemblies from three commercial industrial single cylinder engines on a custom crankcase & crankshaft to tie it all together. Three camshafts are geared together to operate the valves.

It was good to see two competitors in the novice category of the flying only event with A. Harris putting some excellent flights with his Piper Cub and junior, Dallan Pardey not far behind with his Spacewalker ably assisted by his caller (and grandfather) Tom Pana.

Special thanks go out to the COMSOA club for their hospitality, immaculate field preparation and hard work keeping us fed and watered. Thank you also to our sponsor for the prizes this weekend, Hobby King. I'm sure most of us have been their customers at one point and it's good to see them supporting local events.

EVENT	2019 NSW State Scale Championships, F4C.	
PLACING	NAME	MODEL
1	G. Harrod	Harvard
2	A. Williams	Tiger Moth
3	J. Considine	Thunderbolt
4	W. Mansell	Spacewalker

EVENT	2019 NSW State Scale Championships, F4H.	
PLACING	NAME	MODEL
1	A. Ogle	Nieuport 28
2	P. Goff	Tiger Moth
3	R. Ogle	Zero
4	A. Hunter	Stampe SV4
5	S. Millar	Corsair

EVENT	2019 NSW State Scale Championships, flying only - Novice.	
PLACING	NAME	MODEL
1	A. Harris	Piper Cub
2	D. Pardey	Spacewalker

Paul McKeown's Be2 takes off. Runner up in flying only advanced

EVENT	2019 NSW State Scale Championships, flyin only - Advanced.	
PLACING	NAME	MODEL
1	A. Ogle	Thunderbolt
2	P. McKeown	Be2
3	P. Goff	Hurricane
4	G. Harrod	Corsair
5	S. Millar	Zero
6	W. Mansell	Stinson
7	A. Hunter	Gee Bee Sportster
8	R. Ogle	Zero
9	T. Pana	Stuka

SAS President Anthony Ogle presents junior Dallon Pardey's well deserved runner up trophy for flying only – novice

Trophies thanks to Aeromodellers NSW

2019 SRCS General Fly-In & NSWSAS Scale Rally

John Considine – NSWSAS

With memories of travelling to dust bowl like flying fields in the middle of nowhere the drive to the SRCS club, lush green fields, forests & a ferry ride across the Hawkesbury River at Wisemans Ferry, was certainly a change for the better. Perfect weather and a field immaculately prepared by the SRCS members made for a great day of casual flying without the pressures of competition events.

John Crockford's Fokker D7

With the NSW Scale Aircraft Society running a rally at the event it came as no surprise that most of the models were replicas of full size aircraft although the event was open to any type of model.

With the event advertised within the local community quite a few locals popped in to have a look & were suitably impressed with the models flown and one visitor took up the offer of a free buddy box flight with the club's training aircraft and decided to join the club. A barbeque lunch was included in the entry fee & the SRCS certainly kept us well fed & watered, thank you.

This event is an annual happening so look forward to announcements in the various newsletters and websites regarding the 2020 Fly-In.

Nice Auster AOP

Andrew Hunter's Bristol Scout with an industrial 4 stroke engine he converted for model use

Les Donovan's Wilga

Not your usual Cub but a new build Carbon Cub which is currently in production

Steve Vickers assists Bill Mansell with his Stinson

Fourth Annual Australian F5J Trophy at the Aeromodellers NSW State Field, Cootamundra

Trevor Smith – AEFA

The first weekend in November saw the return of electric gliders to the ANSW State field at Cootamundra with the 4th Annual Australian F5J Trophy competition presented by the AEFA.

Firstly, a brief introduction to F5J for those who may not have heard of it before:

F5J is an FAI Class and for the first time in 2019 a World Championship event. The FAI refer to F5J as Thermal Duration Gliders with Electric Motor and Altimeter/Motor Run Timer (AMRT). Simply put, a glider with a propeller driven by an electric motor and onboard logger to both cut the motor and measure launch altitude. The full FAI F5J competition rules, field setup guidelines, penalties, and model specifications can be found can be at the FAI website.

The FAI F5J Class is a one class category with wingspans not exceeding 4m and at an FAI Category 1 or 2 event you would be unlikely to see wingspans under 3.5m. To assist new flyers get into the world of F5J competition, the AEFA introduced a 'limited' subclass which includes gliders up to 2.6m wingspan. This new class covers a popular 2m foamy (you know the one), the 100 inch (2.54m) US models, and other foam, built up and moulded models up to 2.6m wingspan. To distinguish between the 2.6m class and the models up to the FAI limit of 4m, the models over 2.6m wingspan are referred to as 'open' class.

F5J is mass launch event with the event run over several rounds. Each round consists of a number of groups. If for example you had 36 competitors, you may choose to have 4 groups per round with 9 competitors in each Group. A limiting factor in how many competitors per group is field size. At Cootamundra we can accommodate up to 10 competitors per group whereas at the recent World Championships in Slovakia there were 18 competitors per group.

The aim of each flight is to maximise your flight time within the 10 minute working time window, score landing points, and minimise your launch height. At launch you are allowed a maximum 30 second continuous motor run with your onboard data logger (AMRT) cutting the electric motor at 30 seconds, if you haven't cut the motor earlier. The onboard data logger then records the maximum height achieved between launch and 10 seconds after motor cut. A launch height penalty (1/2 point/m up to 200m and 3 points/m over 200m) is then applied to this recorded launch height. On landing you can gain additional points by landing along the 10m landing tape. To make it interesting there are at least 15 penalties that can be applied ranging from 100 points to zero score. So your score for the flight is your flight time in seconds + your landing bonus – your launch height penalty.

Running the competition is made easy by using a software system called Gliderscore, which has been developed by Australian flyer Gerry Carter, and is used internationally. This system does everything from create the best draw, provide the timing audio file for running the competition via a PA system, allow easy data entry and provide reports on various aspects of the competition. Gliderscore can be found at http://www.gliderscore.com and it is worth having a look at.

Now for the event itself:

The F5J Trophy held on Saturday 2nd and Sunday 3rd November saw limited and open class flyers competing side by side for the respective limited and open trophies and prizes.

Despite the dismal weather forecast (strong winds and rain), we decided a few days before the event that it would proceed and we had 34 competitors coming from SA, VIC, QLD, NSW and ACT. With the Australian F5J Team Selection Trials for the 2021 F5J World Championships to be held at Cootamundra in November 2020, many of the World Championship aspirants were in attendance, no doubt checking out the field and local conditions for next year's Selection Trials.

With the pilots briefing completed the event got underway at 9am on the Saturday and from the outset the winds were strong. F5J can be won or lost on the launch height penalty but under the prevailing conditions everyone was launching high. Despite the conditions there were strong thermals to be found and near max flight times were being recorded. For some pilots it was a test of how good you were at sitting your

glider into the wind and for the lighter limited class models penetrating into the wind was problematic. There was also an unusually high number of zero scores for out landings (greater than 75m from your landing spot) as pilots misjudged the turn up wind towards their landing tape and fell short unable to penetrate into the wind.

With 3 rounds flown it was time for lunch, some relief from the wind and a nice hamburger and coffee from the canteen. However, we were soon lining up to start round 4. The winds however were not abating and after completing round 4 we took a break to decide on whether to continue for the day. Some pilots choose to call it a day but after a short delay those still willing to fly lined up for round 5. If anything, the winds were increasing and after round 5 we called a halt to the competition for the day.

Saturday evening, we had our usual roast dinner and desert at the field and time to reflect, with a drink or two, on the days flying and what might have been had the winds not been as strong. It was interesting to hear that some of the open guys were ballasting their 'windy' models up to over 2kg total weight and in one case near to 3kg, little wonder some of the limited class 1kg gliders were struggling.

On Sunday the number of flyers on the flight line was up again and they were met with similar conditions to Saturday but with the added bonus of light showers, there was even some dust from a distant dust storm. Despite all this natural interference, there were thermals to be found and good flight times were being achieved. There was even a marked reduction in the number of out landings. With the occasional stop for passing showers we managed to complete another 4 rounds on Sunday and with 9 rounds completed for the competition we stopped at 1.30pm for lunch and the presentations.

It was certainly a challenging weekend but as one flyer told me, you just have to fly to the conditions you are presented with. Thanks to all those who participated, and I hope to see you again at Coota in November 2020.

One again congratulations to the winners:

Open Class:
1st Andrew Meyer
2nd Scott Lennon
3rd Dave Millward

Limited Class:
1st David Moore
2nd Tom Clifford
3rd Ralph Dephoff

Also, thanks to our prize sponsors: Modelflight, Sky Soaring Robots, Electric Flight in Australia, and the AEFA.

And it would be remiss of me if I didn't thank the Coota club for the well maintained facilities and of course Helen and her team for the great canteen food and the roast dinner and pav on Saturday night.

The next AEFA event at Cootamundra is the National Electric Flight Rally over Easter 2020, come and join us.

Open class and overall winner Andrew Meyer gets another spot landing

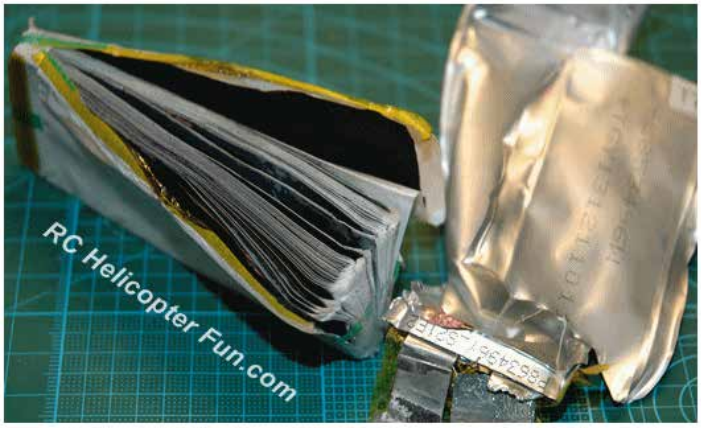
LiPo Batteries – Handling the Risks

Clive Weatherhead – WRCS & Secretary ANSW

I run a battery company and, whilst we don't do much with LiPo batteries, I do have a fair exposure to them on a day to day basis, and a good proportion of my aircraft are LiPo powered. I've been using them for many years, so I'm writing this article in response to a lot of questions that get asked at a club level and through ANSW as the state body.

I will be addressing the key risks that come with LiPos. If you use them then you already know the benefits, and if you'd like to read one really good article about LiPo batteries to get a much fuller understanding then I recommend "Getting The Most Out Of Your LiPo Batteries", written by John Salt in Canada and available at this link: https://www.rchelicopterfun.com/lipo-batteries.html . John's understanding, and clear presentation of how to select, use, test and care for LiPos is excellent, and his detail on what is actually inside a LiPo might surprise you. I've used a few of John's photos, with his permission.

The "Guts" Inside a LiPo Cell



LiPo Battery Ion Efficiency & Low Internal Resistance Requires The Many Anode & Cathode Layers To Be Firmly Pressed Against The Polymer Separator Film

So, the risks:

As a starting point, a LiPo battery is an extremely compact way to store power, lots of it that can be released very quickly. If you have a LiPo battery rated at 20C, for example, the manufacturer is suggesting that you could use the bulk of the power contained in the battery at a maximum rate of 20 times the battery capacity so a 3000mAh pack (3Ah) could be drained at a rate of 60amps, using 3ah in 3 minutes… which I am sceptical about. Firstly, manufacturers and marketing people are prone to exaggeration. Secondly, you really don't want to use all the available power in your pack. Thirdly, their figure is based on a pack in perfect condition and peak charge. Fourthly, the cabling is woefully inadequate to carry that sort of current for minutes at a time. There will be fifthly, etc, but the bottom line is that if you run a 3000mAh 20c pack at 60amps, you are, at the very least, going to end up with something badly puffed, traumatised and with a drastically reduced life.

Levels of LiPo puffing from none on the left, to drum tight on the right.

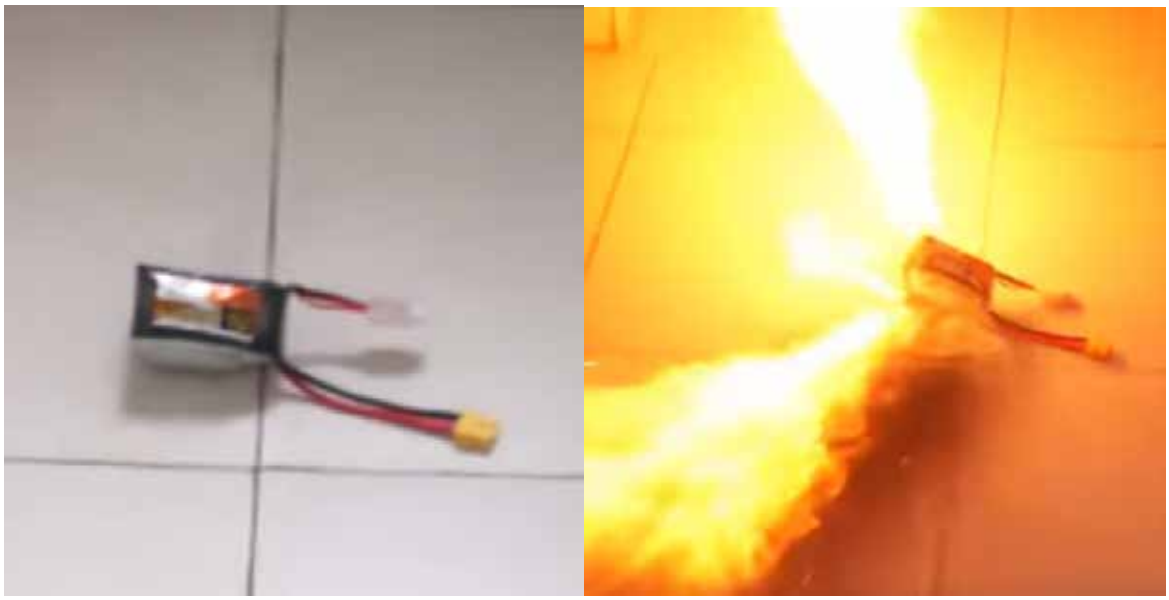
Going on from this, if your battery pack gets damaged and/or has an internal or cabling short, the result can be the pack delivering all of its power in a few seconds, violent chemical fire, extreme temperatures and very little hope of stopping it.

There are links all over the internet to people putting LiPo batteries though this process, puncturing them, overcharging them, shorting them, and the fires are always spectacular. I won't post links here but, to put it in perspective, a LiPo battery failing inside an ammunition box can be sufficient to cause the box to fail and the fire to spread beyond it. So, an ammunition box might be good enough for carrying ammunition yet might not always be good enough to contain a LiPo fire.

So, I think it is fair to say that unless you store dynamite in your workshop, your stash of LiPos might be the nearest thing to it.

What causes a LiPo to fail and catch fire?

1) **Puncturing**
2) **Shorting of cells or cables**
3) **Overcharging**
4) **Excessive heat**
5) **A few other things – less common**

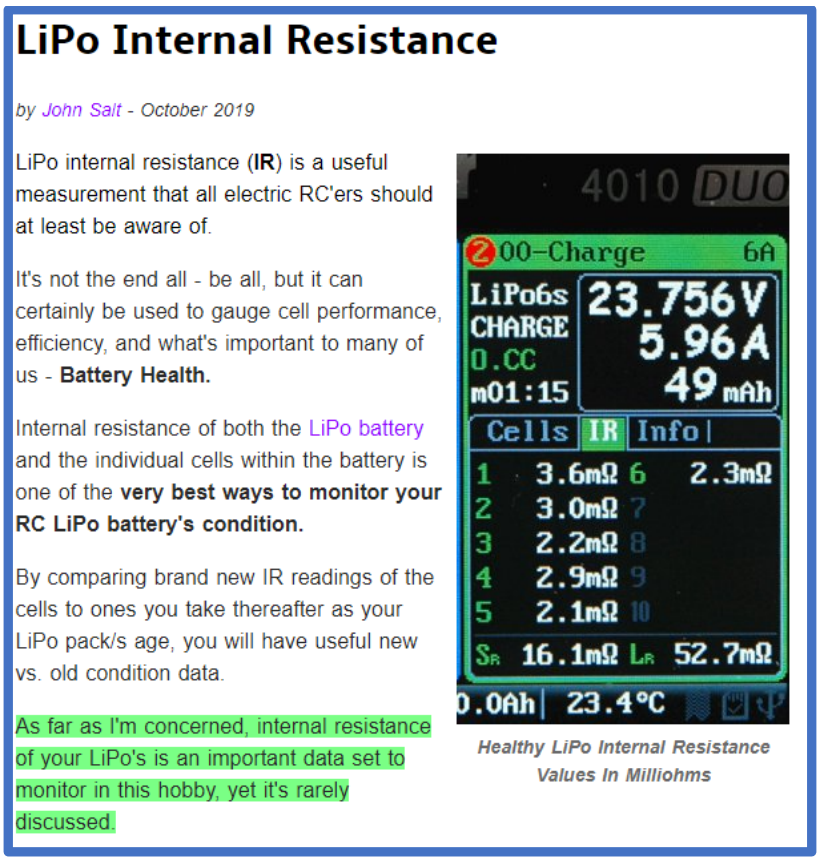


Above, a snip from YouTube – same battery, about 1 second between the two images.

So, I won't give advice, but I'll share with you what I do, and why, and you might find some useful nuggets in there:

First of all, charging:

You can charge a LiPo fairly quickly. I regularly see people charging them at a rate of several times their capacity – so a 3mAh pack at 9amps, to get it recharged in 20 minutes. The pack is usually capable of handling this, but the result will be a shortened life - less uses before the pack's internal resistance is too high to make it viable.



LiPo Internal Resistance

by John Salt - October 2019

LiPo internal resistance (**IR**) is a useful measurement that all electric RC'ers should at least be aware of.

It's not the end all - be all, but it can certainly be used to gauge cell performance, efficiency, and what's important to many of us - **Battery Health.**

Internal resistance of both the LiPo battery and the individual cells within the battery is one of the **very best ways to monitor your RC LiPo battery's condition.**

By comparing brand new IR readings of the cells to ones you take thereafter as your LiPo pack/s age, you will have useful new vs. old condition data.

As far as I'm concerned, internal resistance of your LiPo's is an important data set to monitor in this hobby, yet it's rarely discussed.

Healthy LiPo Internal Resistance Values In Milliohms

Unless you need the pack in a hurry, let it cool for at least 15 minutes after use before charging, and then charge it at a rate of 1C, so a 3000mAh pack at 3amps, so that it recharges in an hour. That's a nice compromise and gives you a happy battery!

The other thing with charging is use a balancing charger and balance the cells every time. There really is no point in not doing so, and it will pay dividends in longevity because a pack with unbalanced cells put under load will be drawing the same current through all of the cells (they are in series) and the weaker cells will be further weakened as a result.

I always use a charging pouch or a fireproof container to hold the battery whilst charging. I try and keep it on a metal or stone/concrete surface, away from flammable materials, and I never leave a charging pack unattended, never, ever!

Finally, on charging, make sure that you don't overcharge. If you are charging a 3 cell pack, make sure your charger knows that. If your charger is dumb enough to try and charge a 3 cell pack at 4 cell voltage then there is a fire, waiting to happen, because the cells will be receiving a voltage higher than their thermal runaway limit.

Secondly, storage:

I use two lockable steel boxes to store my LiPos, and those boxes are on a steel shelf, as far away from anything else as I can manage, and with a smoke alarm (cheap and sensible) near enough to go off quickly in the event of a

problem. Given what I know and have seen LiPos do, this is my bare minimum. If I had a concrete bunker, I'd use that. Plenty of workshops have been lost through LiPo fires.

Ammunition boxes are good, but I'd make sure to remove the seal, because that weakens the fire containment capability of the box, and the batteries need to be packed, carefully, to avoid any risk of cables shorting.

Wooden boxes, fireproof charging pouches, Tupperware and other containers are not suitable for LiPo storage. Ask yourself what would happen if a pack failed and caught fire, a very violent fire, whilst you were asleep. If you aren't confident, a decent sized steel ammunition box can be purchased on Ebay for about $30 including shipping. Seriously, why would you hesitate?

AMMO BOX 50 CAL EX ARMY STEEL AMMUNITION BOX FULLY SEALED GRADE A

AU $19.95

AU $9.95 postage

1,961 sold

Watch

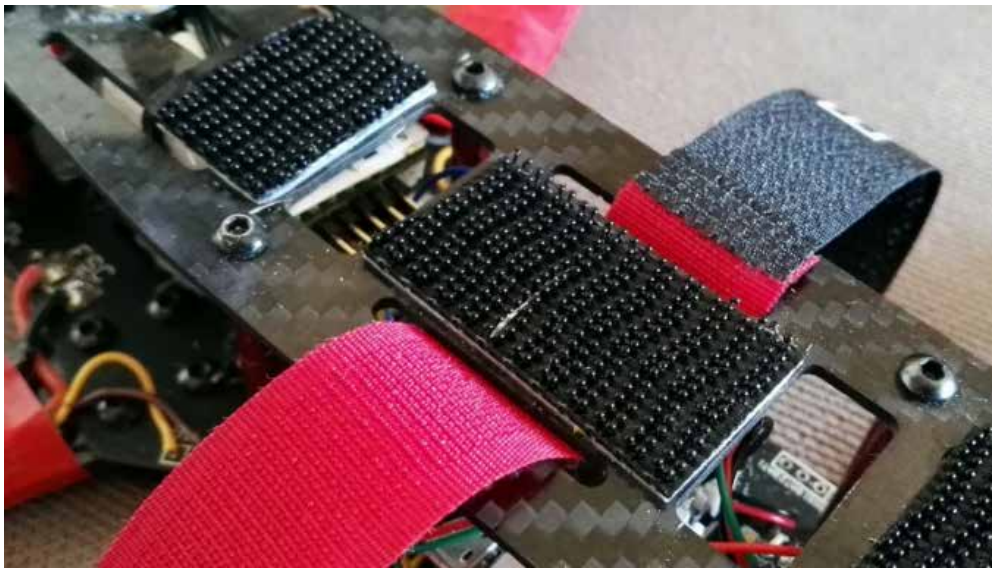
As I said above, store on a non-flammable surface, away from other flammables too. LiPos don't tend to combust when they are sitting, quietly, but there's no point in taking unnecessary risks.

Thirdly, using LiPos:

If I drop a LiPo (it happens), then I check it carefully. If there is a sign of denting or any distortion then I dispose of it safely (more on that later). The same goes for a LiPo that has been involved in a particularly heavy "landing", or one that comes out of an aircraft in a puffed condition.

If there is even a hint of a sweet smell, a delicate whiff of solvent, then the battery has a leaking cell and must go!

I reckon it is a good idea to mount a LiPo in an aircraft on a hook & loop strip, or similar, with another strap over the top so that the pack is retained in the event of a crash. The aircraft is a pretty good crumple zone in most cases, but you don't want the battery pack to be bent, punctured or have cables ripped out with the resultant shorting risk, so make sure there is slack in the cables and the battery is as firmly held as is reasonably possible, and make sure that you find the battery if you crash in the bush. I'd say that is more important to recover than the rest of the debris!



The above is a great example (with credit to Pawel at QuadMeUp), using 3M Dual Lock as the hold down – a little more expensive, but doesn't deteriorate and holds the battery beautifully. Poking a battery into a slot without any strapping or hold-down is asking for trouble. Even the best pilots crash, sometimes.

I try to use the 80% percent rule – I aim for enough battery power that I never need to run it above 80% of its capability (C rating), or draw more than 80% of available power, and I make sure that the ESC is never working harder than 80% of its stated maximum. If I can, I'll make the numbers lower than that, but in a high-performance aircraft, there is sometimes a compromise that needs to be made.

Fourthly, LiPo fires

Water won't put out a burning LiPo but it may douse surrounding fires that the LiPo has caused. For the LiPo itself, foam, CO2 or dry chemical extinguishers, covering with sand or soil, get the burning LiPo onto concrete or a place where it can burn out, safely, whilst being watched. If you put a combusting lithium cell into a bucket of water, it may well keep things under control, but it won't be putting the fire out (even if it looks as though it has), so be careful when you remove the LiPo from the bucket and be prepared to put it back unless its power has been exhausted.

Every pilot and every club needs to have a known and agreed approach to handling a fire, how to respond, how to contact the fire service quickly, how to stay safe and minimise the impact. If you don't know what your club's approach is, then now's the time to find out, and for the club to agree an approach if it doesn't have one, before it is needed.

Fifthly, disposal of old LiPos

Don't puncture them!

Don't drop them in the bin in the hope that the garbage truck manages to swallow them without crushing, because if they are crushed, the garbage truck is likely to be very badly damaged indeed!

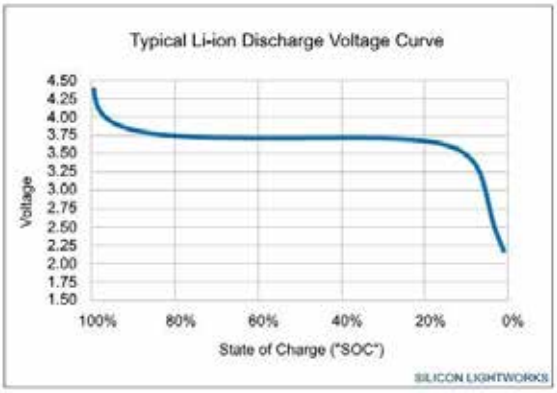
You can discharge them very carefully using a controlled load, a low wattage globe or similar, to SLOWLY take them down, then put them in brine for a few days. Don't leave them unattended until they are in the brine.

My approach, which is something that we also do, as a business, for our customers, is a large bucket of water with about 5% to 10% salt mixed in (ie brine) to make it conductive enough to do what we need. We cut the cables off the battery (different lengths to avoid shorting, and one at a time) then we put the battery in the brine mix for at least 10 days. It is then fully discharged, and best taken to a battery shop or similar where it can be taken away by an approved recycler.

Finally, using LiPos for receiver power:

This is a little off topic, but it is relevant to the risk of crashing.

The power band from a LiPo is, more or less, all or nothing. The voltage stays high and almost flat until the battery is virtually exhausted, then drops very dramatically. Drawn on a graph, this looks like a cliff edge, not a gentle slope.



Which means that your battery can supply your receiver until the last moment, then it can't, and you lose signal, no warning twitches, no slow servo response, the power has just gone and so has your pride and joy.

Now, if you are flying a small plane with an ESC, then the ESC will have a cut-off for the motor long before the LiPo is exhausted, so you'll still have power for the receiver to allow you to land (usually). If, though, you have decided to use a LiPo with some form of power converter to adjust the voltage to whatever the receiver needs, then you don't have that luxury. Why bother? NiMh batteries are brilliant for receiver packs. A safe and steady reduction in voltage, very stable, easy charging and simple to design a battery installation with enough power for the model.

To me, it's horses for courses. Why set up something complicated to make a battery designed for high power output work in a longer/lower power draw setting, and risk your model? On anything larger than a small foamie, I might have a LiPo and ESC, but I also like a separate NiMh receiver pack.

I know, in writing this, that there are going to be people who disagree, or have more to add, or think that I am fundamentally wrong on some of the points so, as I said, this isn't advice, it is what I think and what I do and, so far, it has worked!

If it helps some readers operate their LiPos more safely, it has been worth the effort and I'm going to repeat that link to John Salt's website here. It really is worth a visit – a very good read!

https://www.rchelicopterfun.com/lipo-batteries.html

Clive Weatherhead

Secretary – ANSW

The Size Never Matters

Joseph Frost

Well, it is questionable, but I always believed "the bigger they are the better they fly", naturally if set up correctly.

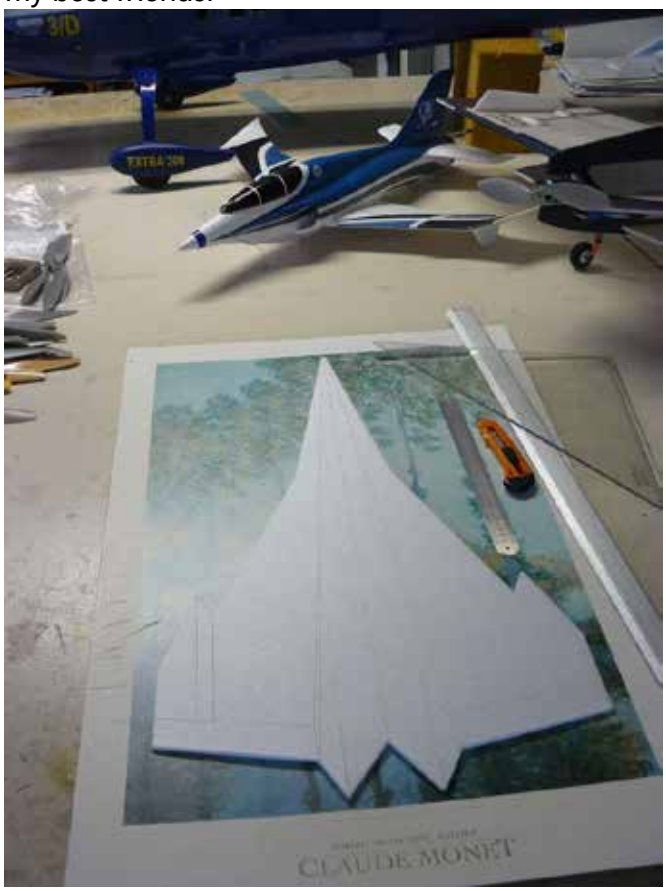
Nevertheless, being an EDF jets nutcase for well over 20 years, building and flying anything from 55mm to large 127mm fan powered models, I have noticed the development of tiny EDF power units with the help of 3D printing, going to such a tiny extreme as 20mm ID.

Having a new ambition to create the smallest single and twin EDF delta jet, based on a few of my existing models (and possibly also fly it indoors, my search ended in a negative as these tiny 20mm units are still in their very early development stage and are unproven for their power and reliability.
Looking bit further, afield I have found numerous slightly larger 30 mm EDF sizes available on various internet sites with some reasonable reviews and so I placed an order on couple of fully assembled 30mm size units.

The chart data showed quite decent figures, though bench tested, so normally, based on my experience I reduce these figures by some 25% to be more realistic when fully installed in the model.

While waiting for the OS arrival I also ordered from the local suppliers some miniature servos, speed controllers and micro receivers and started on the project, "Mini Twin Widow" first, based on one of my giant 8Kwatt 90 mm powered ones that I have been flying successfully for the last 9 years.

Using 3, 6 and 9 mm depron sheets, light balsa and ply, I could have saved further weight if I used very slow cure bonding agents but as always, my impatience to create a new toy beat me and went for the fast setting heavier 5 and 15 min. Epoxy, as my best friends.



While relying on the chart measurements I have mocked up the dummy power units out of cardboard and also built the mount supports to the frame for a simple power plants installation well before their arrival. I also completed the full paint job to replicate the larger sister ship and then the fan units arrived earlier than expected. Cute, though fragile little things, they had to be modified for mounting to the frame by adding tiny plastic brackets secured with liquid nails and miniature screws. I have also laminated the fan shrouds with

an extra layer of very light alloy casing to stiffen them up and make sure they won't deform under the loads as they are mounted externally.

After rolling out a couple of thrust tubes using fine Mylar sheets to precise measurements, both units were temporarily test fitted to the mount rails to adjust the upthrust and at a later stage, secured at the rear with further supports to the air frame.

As this is a one of a kind in my fleet I have ordered two sets of tiny 18 and 20A, ESCs to make sure the one set will work if the worse happened. First, there was some soldering to do, to hook it up and after removal of the stock fitted 2mm bullet connectors on these tiny 20A, ESCs I discovered very nasty oxidation (Black wire) under the insulation. Scraping as much as I could from the very fine 18G copper strand leads, hooked it all up to run off the 3S/1.3Ah/60+C battery. Anxious to see how it runs resulted in bit of disappointment, both units running pretty rough with rather lousy thrust output.

Good thing I had a spare ESC set, this time only 18A but fully programmable. Back to the soldering and after the first test run it was a different story. A much smoother and powerful run of both units, but it took lot more time to re-program each ESC for ideal run while ground testing it with an E-meter to compare Voltage, Current draw and Wattage at various throttle settings. Also motor run temperature. All these figures are recorded in the log book for later analyses and final hook up for optimum performance.

(Later, when replacing the leads on those 20A, ESCs I discovered the black wire was only on each soldered end of the wires some 25 mm in length, the rest of the copper strands were nice and clear so I do believe the technician while assembling the units must have used some acidic, corrosive flux compound to create such a nasty oxidation (bit of a worry!)

The current draw at approx. 15-16A each was higher than on the data sheet, stating only 11-12A at 100% of power, despite my ESC re-program to the optimum and most efficient settings, due to the tiny units working a bit harder with the extended thrust tubes which is quite normal. The thrust was also lower than stated but I was more than happy with, at close to one to one power to weight ratio after vertical hover hold test.

The fan units come with the wider bell shaped shroud air intake, but to improve it, I'm designing miniature rounded bell rings to be fitted to the front which may further improve the performance by some 10-15%.

While intending to use 6ch. compatible receiver to my radio, I found some issue, having had to re-bind the RX at each hook up! Luckily I found a micro light Spectrum RX, and after proper long distance range check, the result was all systems ready, to go.

My patience ran out waiting for the 3D printed bell intakes so I decided to test fly it without them. To make sure I wouldn't stuff up my maiden hand launch, I asked an experienced modeller friend to chuck it for me in perfect calm conditions with rather limited visibility due to the smoke haze.

Full stick, and of she went! A little erratic at first, just like a roller coaster ride and just missing the ground as the launcher threw it pretty hard and at much too high an angle. The model went first to almost vertical, followed by dropping the nose, just cleared the surface and with a smoother elevator touch I regained control to a gentle climb to safe height. After settling down for number of circuits, I found the model was lot faster than expected and very responsive to controls especially Ailerons - while intending to do a slow barrel roll, I managed to finish, I think "3" before I even blinked! Large loops were a breeze with more than enough power at the top. At half stick the model performs in very realistic manner size wise.

For the first flight, using a lighter 1Ah battery, I kept the flight to 2.5 minutes, coming back at storage level, 3.8V per cell. Next flight using 1.3Ah pack was under lot more control right from the start after re-positioning battery slightly forward. This time after 3 min. flight time the pack was nice and cool and still above storage level.

More than happy with the result, tapping my helper on the shoulder with thanks, I returned to the work bench to re-set some elevon travel adjustments, but then realized that the tiny 4.5 grams micro servos are not returning to precise neutral position after up or down deflections which will result in always requiring some minor corrections throughout flights.

Later in the day I decided to have a go on my own with the hand launch. With fully charged batteries back at the field, radio in the left hand, model in the right, tongue used to advance the full stick and off she goes, with the hand throw pointing slightly downward resulted straight down into the soft very high course grass. Next one was much better at fraction higher AOA launch.

The following launch, with a heavier and highest C-rate battery I gave it a pretty firm throw, but this time with the extra power it spiral-torque-rolled inverted into the soft growth still at full power before I had a chance to reduce it. The next one at reduced power to some 75% was another success and a wonderfully enjoyable flight.

8.7 cm Well, a great flyer but two bad hand launches out of four is certainly not very promising, only getting away with each due to the one metre high grass slowing down the impact without any damage. It would be certainly a different ending if hitting solid ground! So the final conclusion is, either to have someone to hand launch it for me or keep on working at it, till I learn it to perfection over the safe soft surface area where I have done each launch so far.

Happy and safe flying, Joseph Frost.

Upcoming Events

Gosford City Aeromodellers Club
2019 Regular Events - All Welcome

Electric Float Planes

GCAC has a freshwater
float plane site in the
Mt Penang complex at Kariong

7 to 11am, $5 to fly.

Sundays September 8th & 22nd
Sundays October 6th & 13th
Sundays November 3rd & 17th
Sundays December 1st, 15th & 29th

For More Info on Float Planes
Call Nic Lucas 0424 350 366

Indoor Flying

Niagara Park Stadium,
Narara Valley Drive, Niagara Park

$20 for an afternoon of indoor fun
in two combined basketball courts

Sunday September 29th 1-5pm
Sunday November 3rd 1-5pm
Sunday December 1st 1-5pm

For more information on GCAC
visit www.gcac.org.au,
email secretary@gcac.org.au or call Jaz Cooper on 0411 053339.

The Orange Model Aircraft Club was formed in 1929 - two years after Lindberg flew alone across the Atlantic, and only one year after Charles Kingsford Smith and his crew made the first hazardous aerial crossing over the Pacific. It was the dawn of aviation's Golden Age.

22nd & 23rd February 2020

BANJO PATTERSON SCALE RALLY

We welcome all modellers to our premier event for 2020.

The weekend is not a full on competition , but a gathering of modellers with varying scale models, having a fantastic time of general flying, and great camaraderie.

We have a fantastic flying envelope with a 2000ft ceiling height and 1000 meters laterally, so more than enough air space for all size models.

Camping is available at our field (no showers available)

Tea and coffee are available all the time, with cold drinks and food available at lunch times. And do not forget the full sit down OMAC Breakfast on Sunday morning, looking out over our spectacular view we have from our club house.

We look forward to catching up with you all.

Program

Saturday 22nd February 2020

7.30: Facilities opened up.
10.00: Welcome & Pilot briefing.
10.00 to 12.30: General flying
12.30pm: BBQ lunch served.
1.00 to 4.00: General flying.

Sunday 23rd February 2020

8.00 to 9.00: The OMAC Sit down Breakfast
9.00 to 10.00: General flying.
10.00. Judging of models by pilots.
10.30: Presentation of Trophies.
10.30 to 12.00: General Flying.
12.00: BBQ lunch served.
1.00 to 4.00: General Flying

Go to YouTube and copy and paste the following links for Banjo 2019

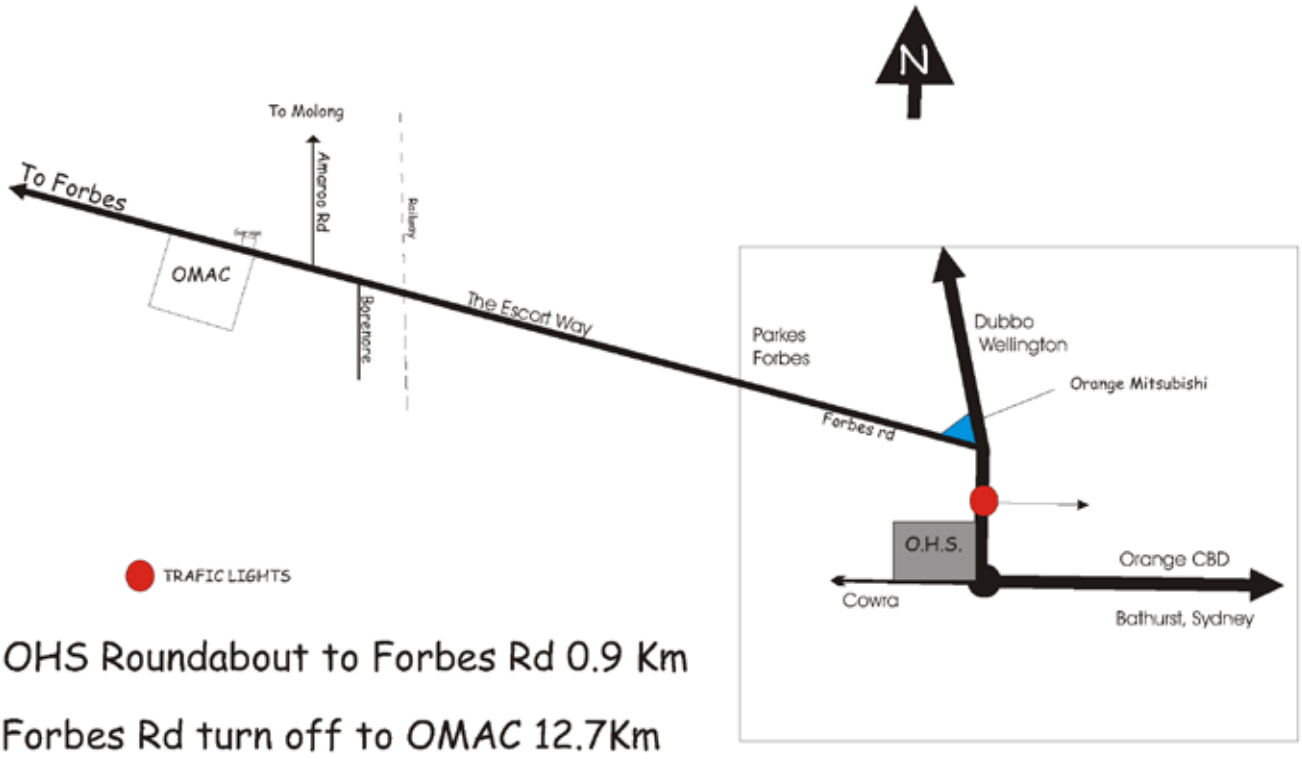
https://www.youtube.com/watch?v=M_4qCwOVhqU&authuser=0
https://www.youtube.com/watch?v=GoXkkz1fkdE&authuser=0

Contacts:

Norm Barnes: 0448 099 975

Steve Smedley: 0418 577 834

Website: omac.org.au



OHS Roundabout to Forbes Rd 0.9 Km

Forbes Rd turn off to OMAC 12.7Km

COMSOA SCALE FUN FLY 16th.and 17th. MAY 2020

AT COMSOA's FLYING FIELD AT EAST MAITLAND OFF RAYMOND TERRACE ROAD.

Saturday the 16th-- Gate will be open about 0700 Flying can commence after 0830. Fly as much as you wish. Registration starting after 0900
Sunday the 17th. Gate open about 0700, flying after 0830 and will be slightly different this year by separating Biplanes and Monoplanes in the over 7KG categories. Judging will be by entrants on Sunday
CATEGORIES-- MILITARY UNDER AND OVER 7 KG. --CIVILIAN UNDER AND OVER 7kg .- JETS and SPORTS MODEL
Prizes 1st. 2nd.and 3rd. in all categories, plus Model of the Meeting.

If you are intending to participate please PRE ENTER if possible. There is no problem changing your model entry on the weekend if required.
Pre entry draw cut off date is Thursday the 14th. MAY 2019

Entry for the weekend is $30. Entry fee includes lunch on Saturday and Sunday.
If pre entering pay on the weekend.
MAAA Membership cards and Heavy Model/Turbine Permits will need to be sighted.
Free tea and coffee. Cold drinks on sale all weekend.
VISIT OUR WEB SITE www.comsoa.com ***for up to date info for the event and about our club.***

AN ENTRY FORM is on our web site, it is a very easy to use electronically submittable form. Also there is a blank form which can be printed and posted or transmitted by attaching to an email to scalefunfly@comsoa.com
If Mailing and for general inquiries :-
Jason Russ, 75 Clyde Circuit. Raymond Terrace 2324
Phone 0414505212

Deadline for submissions to Newsletter #424 (December 2019) is Monday 16th December 2019.

Note: There will be no Newsletter in January

Please forward any changes of mail or email address together with your AUS Number directly to the Registrar.
dave.lewis@internode.on.net