

Newsletter of The River Valley Flyers

Club #948

September 2018

President.....	Don Danczyk
Vice President/Secretary.....	Bob Barclay
Treasurer.....	Bob O'Connor
Safety Officer.....	Larry Chamberlin
Web Master.....	Bob O'Connor
Newsletter Editor.....	Don Danczyk
Indoor Flying Coordinator.....	Roger Denne'e
Turf Technician [Field Maintenance Coordinator]	Bob O'Connor
RVF E-Mail.....	rivervalleyflyers@yahoo.com



From the President and Editor: I wish that the summer would have a few more months left to go this year, but unfortunately it is just about over. Summer just seems to always go by so quickly. Even though I haven't been out as much as I had hoped this summer, I had been working on some new helicopter maneuvers. All was progressing nicely, until about mid-August when the bad luck set in. Two machines crashed in one day due to a linkage failure on one, and the other had a tail rotor mechanical failure.

Monday evening club night will continue through September as long as the weather cooperates. We had some well attended evenings this summer, but the weather did not always cooperate as well as it could have. It's good to see all the members out there on Monday evenings. Let's try to keep this going for as long as we can this fall.

The field is looking pretty good despite the hot and dry summer that we have had. Thanks to all the members who helped with the mowing and irrigating of the field this summer. The hard work that was done by the mowing teams have kept the field looking great.

The fall will soon be here, and with that comes nominating and voting for the club officer positions for 2019. We need your help, and we need some fresh ideas from club members on how to continue running the club next year, so please consider filling these positions this fall.

That's all I have for now, please try to make the meeting on September 5th for more information on upcoming events. Let's try to hold the September meeting at the flying field one last time this year so we can get in some flying beforehand. I hope to see you there.

Don

Advice from Our Safety Officer

Hello fellow model aviators,

I recently became aware of a new AMA Safety Code issued January 1, 2018 and thought it appropriate to share said Safety Code with y'all, just in case you missed it, like me. I don't recall seeing a big announcement regarding this but key elements of AMA's Safety Code now include the requirement to see and avoid manned aircraft and maintain model aircraft operations within visual line of sight. I don't think we have any issues with this at our field but if you are fortunate enough to be able to fly at or near an airport, this may be an issue. In short, y'all be careful now, ya hear? Please review the new Safety Code below, there may be a quiz at the meeting on September 5th! See you then and in the meantime, **FLY SAFE!**

As an AMA member I agree:

- I will not fly a model aircraft in a careless or reckless manner.
- I will not interfere with and will yield the right of way to all human-carrying aircraft using AMA's See and Avoid Guidance and a spotter when appropriate.
- I will not operate any model aircraft while I am under the influence of alcohol or any drug that could adversely affect my ability to safely control the model.

- I will avoid flying directly over unprotected people, moving vehicles, and occupied structures.
- I will fly Free Flight (FF) and Control Line (CL) models in compliance with AMA's safety programming.
- I will maintain visual contact of an RC model aircraft without enhancement other than corrective lenses prescribed to me. When using an advanced flight system, such as an autopilot, or flying First- Person View (FPV), I will comply with AMA's Advanced Flight System programming.
- I will only fly models weighing more than 55 pounds, including fuel, if certified through AMA's Large Model Airplane Program.
- I will only fly a turbine-powered model aircraft in compliance with AMA's Gas Turbine Program.
- I will not fly a powered model outdoors closer than 25 feet to any individual, except for myself or my helper(s) located at the flight line, unless I am taking off and landing, or as otherwise provided in AMA's Competition Regulation.
- I will use an established safety line to separate all model aircraft operations from spectators and bystanders.

Larry Chamberlin

Safety Officer

Lipo Battery Basics

Charging Your Battery

From a 2015 issue of Model Aviation.

Safely charging and storing LiPo batteries is an important requirement of electric-powered flight. LiPo batteries rose to popularity with their ability to provide longer flight times with less weight as compared to the NiMh and Ni-Cd batteries they have largely replaced.

The saying “with great power comes great responsibility” would be a fitting description when describing LiPo batteries, but understanding the basics of this battery technology and having a working understanding of your charger will go a long way.

Chargers

It should come as no surprise that if you are going to use LiPo batteries to power your electric aircraft, then a charger designed to charge LiPo batteries is required. Although some RTF aircraft come with basic chargers, we are going to focus on stand-alone chargers that offer more flexibility, and functionality.

When it comes time to purchase your first charger, or possibly a replacement charger, there are many things to consider such as input power, output power (in watts), capability to charge single or multiple battery packs at the same time, number of cells supported, balancing, and computer connectivity (for tracking and updates).

Selecting a charger with an LCD screen is also a good idea so that you can easily and accurately change charging parameters and monitor the charge cycle and the voltage of individual cells.

Input Power

Chargers receive power from alternating current (AC), direct current (DC), or have the option to use either one. An AC charger has a built-in power supply allowing it to be plugged into a wall socket, making it handy to charge batteries anywhere there is an available outlet.

DC power comes by either plugging the charger into a power supply or by connecting it to a battery. This is convenient for charging at the field or at events when electrical outlets are unavailable.

Output Power

Chargers are typically rated in watts. Watts are calculated by multiplying the voltage and the amps. A fully charged 2,200 mAh 3S LiPo battery would have a voltage of 12.6. Charging at 1C, it would draw roughly 28 watts of power ($12.6 \text{ volts} \times 2.2 \text{ amps} = 27.72 \text{ watts}$). As you might expect, charging at a higher C rating will increase the required wattage needed from the charger.

Single and Multiport Chargers

Multiport chargers allow two or more batteries to be connected to the charger and simultaneously charged. The only drawback is that the separate ports on the charger split the available wattage, so a four-port charger might only support 50 watts per channel versus 200 watts that might be supported on a single charger.



The Graupner Polaron is a two-port charger with each port supporting 400 watts. This DC charger can be purchased with a matching power supply. Its form factor doesn't take up much space on the bench.



The Hitec X1 Touch AC/DC charger is a 55-watt touch screen charger that is capable of charging one- to six-cell LiPo batteries.

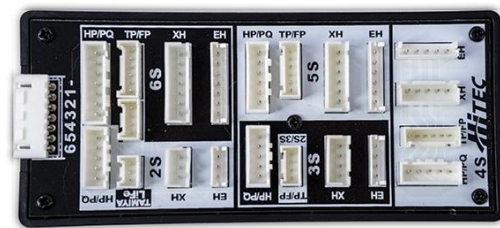
Balancing

Balance charging LiPo batteries is essential to getting the most from your batteries by ensuring that the voltage of each individual cell in a pack is equal. Balancing helps prevent single cells from being overcharged or discharged, which can damage the cell and has the potential to cause a fire.

The balancing process will typically discharge the higher-voltage cells to match the lower-voltage cells during the charging

process. Balancing can also be done with stand-alone products such as the Astro Flight Blinky LiPo Battery Balancer.

LiPo batteries composed of two cells or more could utilize one of four balancing connectors: XH, EH, HP/PQ, and TP. Some chargers include one or more balancing boards and some have all four on one board. If your charger doesn't have the balancing connector to match your batteries, you can probably purchase one.



The Hitec universal balancing board, supplied with the X1 Touch, supports all four types of balancing plugs. Other chargers might come with up to four smaller boards.



Depending on the different connectors on your batteries, you may want a charge lead that can support several, such as the one pictured, as opposed to a separate charge lead for each connector.



The XH balance connector has become the most common connector found on batteries in the US. E-flite and ElectriFly are examples of brands that use this plug.

Connectors

Beyond the balancing connector, most batteries have a primary connection used to connect the battery to your aircraft and to the charger. This consists of a positive and negative wire with a connector that is usually preinstalled on the battery when purchased. Some batteries come without a connector, allowing the end user choose the connector. (To learn more about connectors, see page 33 of the July 2015 issue of Model Aviation.)

Bullet connectors with one positive and one negative lead are used to connect the charge lead to the charger. On the other end could be a pair of bare wires (requiring that a connector be installed), a preinstalled connector, or multiple connectors.

Read the Instructions

Before using a charger or charging a battery for the first time, thoroughly read the instructions. On a charger with an LCD screen, take time to navigate the menus and learn how to change the charge setting. If the charger includes a USB connection, check online or with the manufacturer to see if there are any firmware or software updates. If so, follow the manufacturer's instructions and update the charger.

Visually inspect the charger to ensure that all of the leads, connectors, fans, etc. are serviceable and working.

Thunder Power provides the following instructions before installing a connector or charging a battery for the first time:

1. Make a visual inspection of the pack. Check for any damaged leads, connectors, broken or cracked shrink covering, puffiness, or other irregularities.
2. Before installing or changing the connector, check the pack's voltage using a digital voltmeter (not your charger). All new packs ship at approximately 3.8 volts to 3.9 volts per cell. For example: A 2S pack should read approximately 7.60 volts to 7.8 volts; a 3S pack should read approximately 11.40 volts to 11.7 volts.
3. If you find any damage to the pack or leads, or the voltage is significantly less for your pack than specified, do not attempt to charge or use the battery. Contact Thunder Power [or your battery's manufacturer] directly as soon as possible.

Storage Charge

If storing a LiPo battery longer than one week, batteries should be stored at 3.8 to 3.9 volts per cell (approximately 50% charged). Storing a LiPo battery fully charged can affect its capacity loss over time. A LiPo battery charged to 4.2 volts per cell and then left on the shelf at room temperature will lose roughly 20% of its capacity in two or three years. Store the same battery at the optimum storage voltage and put it in the refrigerator and it will take approximately 10 years to lose 20% of its capacity.

Many chargers on the market today have a built-in storage charge/discharge function. Chose this option, input the battery parameters, and let the charger do all of the work!

Charge Rate

To get the most from your batteries, manufacturers recommend charging at 1C, even if the battery states it can be charged at 3C or even 5C. Charging at a higher rate throughout the life of a battery will affect the number of cycles you are able to get from the battery.

Think of your charge rate as similar to shipping a package. To get your package faster than standard shipping has a cost associated with it—namely money. The same goes for your batteries. Charging them at higher than 1C will allow the charge process to complete faster; however, it is at the cost of reducing the number of cycles that the battery will provide throughout its serviceable life.

Safely Charging Batteries

The two most common instances of having a LiPo battery vent or catch fire is arguably during the charging process or resulting from a crash. In the case of charging the battery, you can further protect yourself by never charging batteries unattended, charging batteries in an isolated area away from flammable materials, and using some type of device or container that will encompass the flames if a battery were to vent.

Commercially available products include the LiPo Sack, LiPo Bunker, an ammunition can, or concrete blocks. Any device that you use should contain the flames while allowing the gases to vent. In the case of the ammunition can, you can drill small holes in the top to allow venting. If the LiPo is unable to vent, it could cause an explosion.

It is important to have a nearby smoke detector, sand, and fire extinguisher. The detector will alert you if a pack begins to vent. The sand should be used to extinguish a LiPo fire and the extinguisher is to put out any other material that might ignite because of the fire. Household fire extinguishers are not rated for use on a LiPo fire. Class D fire extinguishers can be used for a LiPo battery fire, but they are costly.



Designed by Mark Wood, the LipoSack was released in 2006 as a means to charge, store, and transport LiPo batteries.

Conclusion

Advancements in LiPo batteries have made it possible to power aircraft from ultra-micro-size to Giant Scale models. Having a basic understanding of the batteries and the chargers used will go a long way toward ensuring the safe use of LiPo technology so you can benefit from lighter batteries and longer flight times.

I want to thank David Buxton, Tony Stillman, Thunder Power RC, and Hitec USA for their assistance with this article.

RVF Club Nights on Monday Evenings at the Club Field

Club Night will take place on Monday evenings from 5:30 till dark.

It is an evening of flying together and help to anyone who needs a hand getting started. Flight Training will also be available if needed. If the weather is bad on Monday evening [high wind or rain] it will not take place till the following Monday.

River Valley Flyers September Meeting Notice:

**When: Wednesday, September
5th at 6:30 P.M.**

**Where:
At the Club Field**

**Bring something to fly
beforehand. If the weather
looks like it will be inclement
that evening, an e-mail notice
will be sent and we will meet at
Hardees in Wisconsin Rapids
instead.**

Upcoming Area Events

September

9/1/2018 - 9/3/2018 -- Mackville, WI (C)
VAM ANNUAL HELI FUN FLY. Site:
Vam Quarry Field. Matthew Cramer CD
PH: 920-205-8628

Email: matthewdcramer@aol.com.

Visit: www.flyvam.club. Sanction #18/528.

VAM Annual Heli Fun Fly in association with the CP Helis Nationwide Throwdown. Come have a great time with fellow rotary wing pilots! Night lighting for night flying on site . \$25 pilot fee covers all 3 days & nights, more info on website. Sponsor: VALLEY AERO MODELERS, INC

9/8/2018 -- Stratford, WI (C-Restricted)
VINTAGE RC RALLY. Site: Mid-State Aeroguidance Field. Tony Lewis CD PH: 715-506-0886 Email: tony@dynamic-rc.com. Sanction #18/1788. Sponsor: MID-STATE AEROGUIDANCE

9/15/2018 -- Thorp, WI (C) FUN-FLY & DAWN PATROL. Site: Marshall RC Park. Michael Zaborowski CD PH: 715-450-9889 Email: grimracercnc@yahoo.com. Sanction #18/1287. Sponsor: WESTERN WISCONSIN MODELERS ASSOCIATION

October

10/7/2018 -- Oshkosh, WI (E)
WINNEBAGO RC FLYERS ANNUAL SWAP MEET. Site: EAA Nature Center Pavilion. Dave Hable CD PH: 920-267-1920 Email: dhable@new.rr.com. Visit: wrcf1269.com. Starts at 8am. Drive to EAA Museum then follow RC event signs. Admission \$5. Lots of raffle prizes. No table fees. Contact Dave for info. Sponsor: WINNEBAGO RC FLYERS