Issue 714 January 2021 Club Charter 667

Flypaper 2021

Official Newsletter of
The Flying Electrons of Menomonee Falls

Celebrating 60 Years of Service to the Community & Counting!

President's Preflight

Our Current Plans for the 2021 Season!

Welcome to year 2021. This will be a transitional year for the club. We don't know, as of yet, how the year will unfold.

The good news is that we didn't get our first major snow fall until two days before New Years., so members were able to continue flying well into the Winter season.

We did not hold a New Year's Chili Dump this year. To be honest, the Chili Dump has never been one of our club's biggest events.

Due to COVID, we're going to error on the side of caution. Watch this newsletter for potential club meeting announcements and events that we decide are prudent to move forward with.

Last year, Steve Huelsbeck managed to host a closed club Electric Event. I believe that he will look to host one in 2021 as well, so we'll keep you posted.

(See **YEAR 2021** on page 6

What You Need to Know About the New FAA Remote ID Rule.

First of all ... there is no reason to panic!

On December 28, 2020 the FAA announced the Final Rule on Remote Identifications of Unmanned Aircraft (UA) Part 89 in Title 14 of the Code of Federal Regulations. This rule codifies the use of remote ID for all UA that fly within national airspace.

Under these new rules, operators have three options under which they can comply. The option that will apply to us as a Community Based Organization (CBO) falls under the category of FAA-Recognized Identification Area (FRIA). Under this option, club members are not required to equip their aircraft with a remote ID device as long as they are a registered member in good standing with an FAA recognized CBO.

(See **FAA UPDATE** on page 4)

Issue Highlights

President: Tom Jacobs
tjacobs421@att.net
262-527-2481

VP, Safety Coordinator & Student Coordinator:
Ed Malec
mechanical.eddie@gmail.com
414-763-7707

Secretary: Chris Milbauer
chrismilb@att.net
414-750-2740

Treasurer: Mark Polzin
mpolzin1234@gmail.com
414-687-7550

Director: Steve Huelsbeck
shuelsbeck@wi.rr.com
414-358-1078

Director: Mike Batson
mebatson@gmail.com
414-350-3803

Director: Kevin Malec
Kevin.010@gmail.com
414-763-7707

Director: Cliff Evans
cevans@wi.rr.com
414-378-5568

Milwaukee RC Association Rep. shuelsbeck@wi.rr.com
414-358-1078

Field Manager: Bob Scrip
bob@flying3drc.com
414-327-5830

Club Meetings:
Second Sunday of Month
7:00pm
De Marini's Restaurant
N88 W15229 Main Street
Menomonee Falls, WI 53051

Flying Site:
N61 W17000 Kohler Lane
Menomonee Falls, WI
www.flyingelectrons.com

RENEW NOW!

$10.00 Renewal Discount When You Renew Your Membership Before January 15th, 2021!

The closing date for renewals at the $10 discount rate for this coming season is coming to a close.

If you haven't currently renewed your membership, you can do so using the special Renewal Application Form at the end of this newsletter.

The **$10 discount is already applied** and indicated on this "RENEWAL" application.

Remember to get your renewal in before the closing date to lock in your savings. The discount will not be extended beyond the postmarked closing date of January 15th.

Flypaper Contact Information

Editor: Tom Jacobs

tjacobs421@att.net

262-527-2481

The Flypaper welcomes for consideration articles of interest, recommended video links, letters and questions you may have about the club, meetings, newsletter, and events. Please direct those communications via email to tjacobs421@att.net. We will respond to all inquiries.

Next Club Meeting

TBD

De Marini's Restaurant

N88 W15229 Main Street
Menomonee Falls, WI 53051

Bring a Friend and/or a Plane to Show & Tell

YouTube

Giant Scale C17 Globemaster - Colin Strauss at Rougham RC Planes (2004)

This video follows the assembly and impressive flight of the great C17 Globemaster with gas turbine jet engines. The model has a wing span of 20 feet, length of 19 feet and a weight of 264 lbs. Powered by four JetCat P120 gas turbine engines producing 104 pounds of thrust.

Giant Scale C17 Globemaster

We Need a Little Love.

Henry Reed has offered this video up as a respite during the pandemic. ***Enjoy!***

Just Something You Need to Watch!

$70,000 RC Airplane? The JetCat 550 L-39C XXXL by Tomahawk Aviation, Mario Walter

Specs:

Scale: 1:2.7

Wingspan: 3,50 meters

Length: 4,50 meters

AUW: 70,00 kg

Required turbine size: 400 Newton

Material: fiberglass/carbon composite

The Aero L-39 Albatross is a high-performance jet trainer aircraft developed in Czechoslovakia to meet requirements for a "C-39" (C for cvičný – trainer) during the 1960s to replace the L-29 Delfín. It was the first of the second-generation jet trainers, and the first turbofan-powered trainer produced, and was later updated as the L-59 Super Albatross and as the L-139 (prototype L-39 with engine Garrett TFE731). The design is still produced in an evolved state as the L-159 ALCA, while more than 2,800 L-39s still serve with over 30 air forces around the world. The Albatros – the most widely used jet trainer in the world – is versatile, seeing duty in light-attack missions as well as in basic and advanced pilot training.

70,000 Dollar Jet Aircraft

(**FAA UPDATE** *Continued from page 1)*

Under this compliance option, the club would apply for and acquire a Remote ID device for Tamarac airfield airspace. Pilots must continue to honor the 400 foot flying ceiling and only fly under line-of-sight flight rules as we presently do.

As a club, over the last year and a half, we have been following AMA and FAA recommendations to become a recognized FAA Community Based Organization. These efforts involved responding to FAA inquiries and providing documentation and letters of agreement currently in force with local area airports.

Late in 2019, the FAA ruled that the Flying Electron's airfield would be considered a CBO and its location would fall outside the Timmerman airspace relieving us of the semi-annual notifications to this and other local airports.

Our actual location puts us on the cusp of that protected area if you look at a map. In fact, while flying using line of sight, our aircraft could still reach into that protected airspace.

Our cooperation with the FAA, in conjunction with the AMA's efforts to lobby for CBO airspace have paid off.

The end result is that we will continue to have a great place to fly and should not be burdened with adding a remote ID device in any aircraft that is flown by members at our field.

Rule Timing

The new rule goes into effect 18 months after it is officially published this month. The club has 18-months to establish a remote ID for Tamarac airfield. At this point, there is no information on exactly what the remote ID hardware technology even looks like.

Over this 18-months, manufacturers at some point will start including remote ID technology in the RTF's they produce. If RTF's are what you're into, then you'll have remote ID already embedded in most or all new RTF's that you invest in. Remember, as long as you are a member of the Flying Electrons, you'll be able to fly without the need for remote ID.

Big Brother

I know that there are a lot of you out there that simply don't like the fact that the government is getting in between you and the hobby you love. I share the same sentiment. But there are a lot of bad actors out there that do bad things, simply because they can.

We recently had an incident at the field where vandals broke in and sprayed graffiti on one of our large pit tables. What's the point of that? These are the same people that can go out, purchase a drone and fly into a full size aircraft. What they did at our field recently is not a big deal but they did it because they could. Most of these vandals don't consider consequences or care about the damage until they are caught and dealt with.

I personally want to see them caught and dealt with. I'm hoping that "Remote ID" is a step in a direction that will help do that.

Here is the summary of where the Remote ID topic stands as of the writing of this newsletter.

1. Clubs will not be required to comply until September 1, 2023.
2. Our club will take steps to acquire our FAA Recognized Identification Area (FRIA) status beginning August 26, 2022.
3. The club will be required to renew this FRIA status every four years to remain current.
4. Special AMA sanctioned events will be provided with a means to deviate from the remote ID operating rules.
5. Individual FAA registration renewals will only be required once every 3-years the fee will remain at $5.00..
6. Home built model aircraft will not need to incorporate remote ID technology when flown at our club airfield.

Our hobby is still unencumbered. The board is going to stay on top of the steps required to ensure you have a place to fly and enjoy the hobby for future years to come.

TJ

Setting Started in RC

Battery Care

Battery power has always been a component of RC flight. From the days of single channel escapement devices to today's high capacity, high amperage lithium powered aircraft. Since most new students are getting into RC through electric powered aircraft, I thought it would be a good time to examine battery packs and how to properly care for them.

I'm no expert in all things powered by batteries, so I'm going to lean on a few authorities that I've looked to for information to pass along that should be helpful in getting the most out of your battery packs in the future, and do it safely.

Although LiPo packs are commonly used now days to power electric aircraft there are still those that are flying nitro and gas powered aircraft which also require electrical current to power receiver, servos and possibly auxiliary channels for gear and flaps as necessary. My large gas powered Christian Eagle is powered by a 50cc Desert Aircraft engine, so it in itself doesn't need a powerful LiPo battery pack to handle its electrical requirements. In fact, I'm still using Nickel Metal Hydride battery packs in this aircraft and they have been extremely reliable over the years.

Nickel Metal Hydride (NMH) battery packs are very similar to Nickel Cadmium battery packs still used in nitro aircraft to power electrical components. Like LiPo batteries, the difference is in their chemistry. I'll discuss NIMH batteries here mostly but you can apply the same thinking to NICAD packs as well.

In my Christian eagle I use two 6-volt NIMH packs; one for the engine's ignition system and one to power the receiver and servos. Some of these packs I've owned for several years and I continue to use them because they continue to test out at adequate voltage and amperage levels.

(Continued next page)

(Continued from previous page)

As a rule, I rely on higher milliamp packs for added capacity. Most packs I use are 2000mAh or higher. The secret to long life in these types of batteries is proper forming when first purchased and then periodic cycling throughout ownership. Following through with these two policies will guarantee long battery life and many more successful flights than you might think.

NICAD & MIMH Differences

NICAD batteries were commonly used throughout the years in RC and remained very reliable but they had some drawbacks as compared to the later introduction of NIMH packs. NICADs were usually of lesser capacity (around 600mA) which means their staying power wasn't as great. NICADs were often much larger and heavier when you went to a higher capacity pack. NICAD packs were used in the first electric motor powered aircraft back in the day but one needed to strap about six or eight together to get enough output.

NICADs are better at dumping their power quickly than are NIMH packs. One could get a 15 minute flight out of a NICAD pack and the pack would be exhausted. One last problem is that NICADs can develop an amperage memory limit. This means that if not properly charged, the battery may not be able to reach its full mA potential creating a limited memory ceiling in one or more cells. Quick chargers could be easily used to charge these pack where NIMH packs require charging at 1C which I'll get into later.

NIMH packs do not have memory issues but require more care in how they are charged and managed. NIMH batteries can pack twice the capacity of NICAD batteries providing a smaller, lighter power source.

The bottom line here is that one should choose a type of pack that will fit their requirements and then take care of them right out of the box.

Battery Forming

When out of the box for the first

time, both types of batteries need to be properly "formatted" as it's called. Although manufacturers claim that the new packs are "ready-to-go" don't necessarily believe it. Once a battery is manufactured and configured, it's packaged for sale and the last critical step is left up to the consumer. Why? Because this last step can't be rushed and inevitably requires an overnight slow charge to bring all the cells up to their full potential. Manufacturers

(Continued next page)

(**YEAR 2021** *Continued from page 1)*

As far as event timing is concerned, we are gauging our future actions on reliable and relevant information regarding how the new vaccines are being distributed and accepted by the general population.

My wife is a family practice doctor. She's not on the front lines with patients that come in with COVID, but she has triaged many to the ER for care. She wears a mask and goggles every day and has a return home routine that she goes through to ensure that she doesn't pass along the virus to me. It works.

She just registered to get the first vaccine on January 8th. When I get the go-ahead, I'll do the same.

As time goes on, we are thinking that by May 2021 most of our members will have been offered the vaccine. A second dose is required to complete the process after 21-days generally.

As vaccines are received, I believe that we could start holding events in June or July, yet with masks and food service cautions applied.

I share this with you so that you know what we are thinking about during this transitional year.

We may send out a survey in the coming months to get your opinions regarding participation in meetings and events. Please watch your club newsletter.

TJ

(Continued from previous page)

don't have time for this and without a "forming" charge the new battery pack may only see up to 40 to 50% of its potential capacity.

New packs need to have each cell brought up to its full milliamp charge. Forming a new pack is very easy but it requires an overnight charge. Never quick charge a NIMH battery pack. These packs cannot take quick charge abuse. It's always better to purchase a pack with high enough amp rating to give you a full day of flying rather than count on recharging it at the field.

Like NICADs, NIMH packs have individual cells that are rated at 1.2 volts each. Therefore a 4-cell pack is rated at 4.8 volts and a 5 -cell pack is rated at 6-volts. These types of packs can lose about 1% of their capacity each day just by sitting around. This means that they are losing capacity from the day they are packaged and ready for sale.

"Forming" a new pack is a way of bringing each cell back up to its full capacity before first use. A standard 50 to 70mAh wall charger can serve as a good forming charger but you'll need to calculate the amount of time required to complete the charge before taking it out to fly.

Most newer higher end chargers have NIMH charge functionality and these are great if you can accurately set charging amperage going into the pack.

The thinking behind forming is to fill the pack at a slow enough rate so that the full cells aren't compromised as the deficient cells catch up to their full potential.

As a cell reaches full charge it will need to do something with the extra power that's being pushed into it. It releases this power overage as heat. Excessive heat can very easily damage a cell.

Therefore you should only apply an amount of charge amperage that a cell can successfully throw off as heat without becoming damaged. This amount is called a C/10 charge.

More About C/10?

C/10 is a recognized safe overnight charge. Your wall charger that came with your transmitter (if you have a rechargeable unit) will likely be in the 50 to 70mAh rating. C/10 is calculated as 1/10th of the capacity of that pack you are charging. If you battery is a 600mAh pack, then you'll want to "form" the pack at about 60mAh (600/10=60.) At 60mAh charge, the pack would require at least 10 hours of charging to ensure that it has reached its initial capacity. But wait a minute; I have a 50mAh charger, is this charger too small to do the job? No, you simply need to charge the pack a little longer. Here's the calculation: 600mAh pack / 50mAh charger = 12 hours required charge time. In some circles this is referred to as "trickle charging" a pack.

Cycling: Reaching Full Battery Capacity

Although you may follow all these directions to the letter, your pack may still not reach total capacity on the first pass. This is where cycling becomes important..

Cycling a battery is like exercising it to build up its strength. Once your battery pack has been well formatted use can use it successfully to fly but you'll want to cycle it occasionally to push it to its full potential. Cycling is accomplished by fully charging and then fully discharging the pack several times. This action in every sense of the word "exercises" the pack pushing its capacity higher and higher until it reaches its maximum potential.

Now, don't look for miracles with your battery packs. But I had some 2000mAh packs cycle to reach outputs of 2200mAh after a few cycles. Where your higher quality packs will reach full capacity and more, some lesser, cheaper bargain packs may fall short. Most packs will reach a good zone of charge after 3 to 5 cycles (about 85% or more of reported capacity.) It may take as many as 10 to 15 cycles over time for the pack to reach full stride and produce all it can give.

(See Trim Chart next page)

(Continued from previous page.)

NiCad & NiMH Battery Forming Table

Capacity	Chemistry	Form Charge Hours @50mah	Form Charge Hours @70mah	Form Charge Hours @100mah	Form Charge Hours @150mah	Peak Charge After Forming	Discharge Current
160	NiMH	DAMAGE (15mah max!)	DAMAGE	DAMAGE	DAMAGE	80 to 320 mah (.32amp)	32mah
260	NiMH	DAMAGE (25mah max!)	DAMAGE	DAMAGE	DAMAGE	100 to 520 mah (.52amp)	52mah
720AAA	NiMH	20.2	14.4	DAMAGE	DAMAGE	.36 to 1.4 amps	100-150mah
800 AAA TW/ENE	NiMh	22.4	DAMAGE	DAMAGE	DAMAGE	NEVER	100-150mah
1000 AAA Super Lattice	NiMh	14	DAMAGE	DAMAGE	DAMAGE	NEVER	200mah
1500 2/3 SC	NiMh	42	30	21	14	.75 to 3.0 amp	300mah
1650 AA	NiMH	46.2	33	23.1	15.4	.85 to 3.3 amps	300mah
Enloop 2000 AA	NiMH	56	40	DAMAGE	DAMAGE	NEVER	400mah
2150 4/5A	NiMH	60.2	30.1	30.1	20.1	1 to 4.3 amps*	400mah
2500 AA	NiMH	70	51.4	DAMAGE	DAMAGE	NEVER	500mah
2700 A	NiMH	75.6	54	37.8	25.2	1.3 to 5.4 amps*	500mah
4000 5/4A	NiMH	112	80	56	37.3	2 to 8 amps*	800mah
5000SC	NiMH	140	100	70	46	2.5 to 10 amps*	1 amp

Capacity	Chemistry	Form Charge Hours @50mah	Form Charge Hours @70mah	Form Charge Hours @100mah	Form Charge Hours @150mah	Peak Charge After Forming	Discharge Current
150	NiCad	DAMAGE (15mah max!)	DAMAGE	DAMAGE	DAMAGE	70 to 300 mah (.3amp)	30mah
700	NiCad	19.6	DAMAGE	DAMAGE	DAMAGE	.4 to 1.4 amps	100-200mah
1100	NiCad	30.8	22	15.4	DAMAGE	.6 to 2.2 amps	200mah
CP1700	NiCad	47.6	34	23.8	15.9	.85 to 3.4 amps	300-400mah
1800SC	NiCad	50.4	36	25.2	16.8	.9 to 3.6 amp	400mah
CP2400	NiCad	67.2	70	33.6	22.4	1.2 to 7.2 amps*	500mah

The chart on the next page provides some examples of forming charge examples covering both NICAD and NIMH battery packs.

Field Testing & Testers

It's always a good practice to field test your batteries between flights. This is the only way you'll notice a drop in performance and a possible time frame for retiring those weakening packs. Field battery testers are relatively

inexpensive and a great way to make sure that your packs are still in good condition for flying.

When testing your battery between flights you must know what voltage your internal pack is rated for, i.e. 4.8 volts, 6 volts etc. This is what is referred to as the "nominal" voltage. When fully charged, a 4.8 volt pack may test out at 5.5 volts or more. A 6-volt pack can charge up to 7.2 volts or more under a full charge.

You should always test the voltage of your pack once charging

(Continued from previous page)

has completed so you know your voltage starting point. When flying a 6 volt pack for example, you'll want to stop flying when the pack is drained down to that nominal 6-volt level. Knowing what voltage you start with and the number of flights your had in the day to bring the pack down to its nominal voltage tells you how many flights you can get out of that pack. So, if you've tracked your packs voltage and it reaches 6 volts after 8 flights, you need not check your battery at the field until you've made about 5 or 6 flights.

If your NIMH or NICAD pack only gives you a couple of flights between charges then it's time to cycle the battery several times to see if it can be recovered, or should be retired.

Field testers are great to have for all kinds of battery types, however they often can vary in their readings. For this reason it's always good to check your tester against a good household Volt/Ohm meter to be sure it's giving you accurate readings. Volt/Ohm meters are generally inexpensive and will confirm that your field testing is giving you readings you can rely on.

I previously owned two separate field testers. One time, I checked my batteries at the field and noticed that they were getting low. I tried checking them with my other field tester and they looked OK. When I tested the battery pack using my volt/ohm meter, I found that one of my field testers was faulty, so I discarded it.

It's always a good practice to check your tools and equipment on a frequent basis. Nothing lasts forever.

Lithium Battery Packs

In this section we'll cover Lithium Polymer (LiPo) and Lithium Ion Ferrite (LiFe) packs.

LIFE Packs

Lithium Ion Ferrite (LiFe) packs, just as NICADs to NIMHs, are simply different in their chemistry and purpose. While NiCad's can handle a burst output of energy and NIMH are designed for slower even output, the same goes for LiPo vs. LiFe packs, where LiPos can provide a burst of power and LiFe packs deliver a constant flow of power.

LiFe packs are not well suited as a power source to electric motors. They do well in providing power for engine ignitions and controls surfaces of many giant scale gas powered aircraft. LiFe packs are generally available in 2-cell configurations although 3 and 4 cell set ups are also available. Each cell is a nominal 3.3 volts and wired in series like LiPo packs. Therefore a 2-cell Life pack is rated at about 6.6 volts. I've been using my 6.6 volt LiFe packs in my giant scale Yak with great success. I check voltage between flights and have never had them go below their nominal voltage level during a flying day. I've also noticed that they charge very quickly, which is great if you should ever have to recharge at the airfield.

LiPo Packs

LiPo packs are the standard in the industry for electric powered aircraft. They have the ability to provide huge bursts of power, they are light weight, an easily

recharged at the field. These packs connect to the motor power source through a high amperage cable connector and then to the receiver using a conventional servo lead pin connector. This connector is plugged directly into the throttle channel

(Continued from previous page)

of the receiver and it's through this connection that power is delivered both to the receiver and control surface servos.

These power channels are controlled through what is called an Electronic Speed Controller (ESC.) This is a separate circuit that is used to route power to both the motor and receiver. The ESC also governs the speed of the motor by decoding the signal from the receiver and opening the circuit to provide power to the motor based on the action of the Transmitter stick.

The ESC must be matched to the output current required by the motor, otherwise the ESC will burn up in the plane. When purchasing a motor, manufacturers recommend the minimum ESC amperage rating required for the motor you are considering so we won't go into how to pick ESC here.

LiPo pack are available in a variety of milliamp ratings and cell counts. Some are very small single cell varieties and others can be quite large at 5000 or 6000 and up milliamps. These larger amperage LiPos are used in many of the large scale aircraft that require motor power equal to large gas engines. To meet some of these high power demands oftentimes two high capacity LiPo batteries will be connected together to reach the required power output of these large motors.

You may notice that a 2-cell pack is referred to as a "2S", a 3-cell pack is referred to as a "3S" and so forth. You might ask yourself, "if it's a 2-cell what isn't it called a '2C' pack? The answer is because the "S" doesn't refer to "cells" it refers to how the battery is wired ... in "series." Each cell in a LiPo pack is rated at 3.7 volts. A 2-cell pack is 7.4 volts, and a 3 -cell pack is 11.1 volts. You simply add 3.7 volts for each cell that's added to the pack.

Charging Lithium Packs

Charging LiPo packs requires a special charger; one that can handle cell balancing. There are a ton of chargers out in the market place. When selecting a charger, you should consider one that will accept AC/DC input at 12 volts or higher. We have three charging stations at Tamarac airfield that are solar powered and will charge up your batteries in between flights. We also have an additional high capacity station that accepts 24 volt input. This charger is used for those higher capacity battery packs and will do a faster job of bringing them to peak charge status.

A second consideration is the number of output charging ports. Look for a minimum of two. This way you can be charging two batteries at a time using the full capacity of the charger. You can

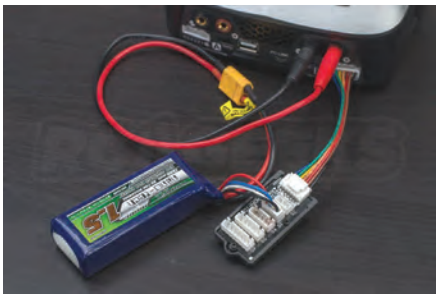
also acquire a balancing board which extends a port so that you can charge more than one battery from a port. The downside of this is that it will take longer based on the number of batteries plugged into the board because the output is shared across all batteries.

Balancing Your Pack

A proper LiPo charger will have a balancing board included. The Lipo battery pack has a power plug and a balance plug attached. The power plug is connected to the main output banana plug sockets and the bal-

(Continued from previous page)

ance plug connects to the flat balance board socket. It's important that you properly match up the LiPo's balance plug with the correct socket and in the correct direction. These plugs are designed to mate properly but they are small and it's still easy to think you've got it lined up cor-



rectly but still get it wrong. The first tip that you have it wrong, is that the plug won't easily fit. So, thinking you still have it right, you try a little harder and then "ZAP!" &*?/?&#$!@!" You've just melted the connector and it's likely no longer useful.

My only advice is "be careful." Check and double-check that your connectors are properly aligned and facing the right direction. All it take is two pins touching the wrong two pins and sparks will fly!

Select Battery Type

Once properly connected to your multi-charger you'll need to select the right type of battery for charging. My multi-charger charges everything from NICADs to car batteries and many of them do. Once you've selected LiPo as the battery type you need to select the charge output amperage.

Select Output Charge Current

Just like our NICAD and NIMH examples above, LiPos like to be charged at 1C or 1 times the battery's capacity in amps. Therefore, for a 1500 milliamp 3S pack, we would want to set the charge rate at 1.5 amps. Charging at a higher rate can damage the battery and cause internal resistance to build up. This internal resistance will make it difficult for the battery to deliver power and also difficult to take a charge.

Setting the Cell Number

Next you should select the number of cells. In our case, we have a 3-cell pack, therefore the charger should be set at 3S. This is about all you need to do to get your charging underway. Your charger should have an option to view each of the three cells under charge and their current voltage status. Once each cell reaches its target voltage of 4.2 volts, the charger will stop charging and you're ready to go.

Timing Your Flights

One can damage a LiPo pack by running them down too far below their nominal voltage. In a LiPo's case this is about 3.7 volts per cell. Any lower and they risk damage and overheating. The way to avoid this, once again, is through the use of a battery field tester.

During your maiden battery flight (that's the first flight with new battery pack) check your before flight voltage, fly for about 5 minutes and then check your packs resulting cell voltage. The objective is to determine how long you can fly to bring your battery pack's voltage down to 3.7 volts. This will be your flight time. Now you can set the timer on your transmitter to sound the alarm at 5.5 minutes allowing you 30 seconds to bring the aircraft is for a safe landing for a 6-minute flight.

Don't be too alarmed if you can't make it back to the runway before 6 minutes. It's the constant abuse of your battery pack that does the significant damage over time. But establishing a good usage policy will give you the 100 to 150 flights you expect out of a battery pack.

Storing LiPo and LiFe Battery Packs

When you anticipate that you'll not be flying for a couple of months you should store your batteries at their nominal voltage of 3.7 volts for LiPos and 3.2 volts for LiFe packs. This process ensures that they remain in good condition over an extended period of time. Most all decent chargers have a storage function built in that allows you to easily

(Continued from previous page)

bring cell voltage down to its nominal level for storage.

LiPo Safety

LiPo packs are susceptible to generating high heat temperatures when something goes

wrong. This could occur while charging or just simply sitting around the house. This is why it's very important not to leave your batteries unattended while charging. A battery that has been damaged, or its chemistry or wiring connections have been upset, can quickly cause a fire.

An "Ammo Box" is an effective and low cost way to store your batteries for the Winter and while traveling. These boxes are designed to contain hazardous munitions and are air tight. This means that if a fire does start due to a battery malfunction while in the closed container, it will starve for oxygen and extinguish itself. One can find these boxes for about $20 at local area sporting goods stores where hunting equipment is sold.

LiPo Battery Disposal

Not only should you check your LiPo pack's cell voltage levels after each flight, you should also give them a good visual inspection. This is especially true after a hard ground hit. One of the clues that you battery may be ready for retirement is when you notice it starting to swell or the cell voltage levels are not similar in value after charge or discharge.

A "puffy" LiPo pack indicates that the chemical composition of the pack is breaking down. Most all LiPos will eventually swell as they age from use. They will swell more rapidly from misuse and that's why it's important to properly care for your LiPo packs. When you notice some significant swelling that just won't go down, it's time to consider retiring the pack.

When a lithium battery is damaged due to crash or simply out lived its usefulness, it must be properly disposed of. LiPos should never be simply dropped into a rubbish container until the voltage has been reduced to zero. I usually set aside my questionable packs for disposal in a separate "ammo box" for safe keeping until I ready to dispose of a few at a time.

To properly bring the voltage to zero, mix 1/2 cup salt with one gallon of water and submerse the bad packs in this solution for two weeks. This will slowly and safely discharge the battery until the voltage has dropped to zero volts, which eliminates the risk of any chemical reaction. After two weeks, it should be safe enough to place the battery pack in a typical rubbish container.

TJ

Federal Aviation Administration

It's Also Time to Renew Your FAA Registration

The Federal Aviation Administration (FAA) has important registration information for drone recreational flyers whose registration was automatically extended until December 12, 2020.

It's time to renew your FAA registration. The process is simple and easy by clicking the link below and accessing the FAA Drone Zone Dashboard.

FAA Registration Renewal

Be prepared to provide your credit card information to handle the required $5.00 renewal fee.

2021 MEMBERSHIP "DISCOUNT" RENEWAL FORM

All Discounted Fees Are Already Calculated On This Form

You must include a photocopy of your AMA & FAA Registration to receive your membership card!

☐ Check this box if you have updated your address, email, phone, etc.

AMA NUMBER: _____ FAA NUMBER: _____

(Please include copies of both cards)

NAME: _____

ADDRESS: _____

CITY: _____ STATE: _____ ZIP: _____

EMAIL: _____

PRIMARY PHONE: _____ DOB: ____/_____ (month and year only)

RADIO CHANNELS CURRENTLY USING:: _____ , _____ , _____ , 2.4 GHz: _____

SPONSOR (Required for new membership): _____

By signing this application I agree to abide by the Field Rules.

Signature: _____ Date: _____/_____/_____

Make checks payable to The Flying Electrons, Inc.
Mail to: The Flying Electrons
Chris Milbauer
4952 N 106th Street, Milwaukee, WI 53225
414-750-2740
chrismilb@att.net
Academy of Model Aeronautics, 1-800-I FLY AMA, www.modelaircraft.org

The Flying Electrons Inc., www.flyingelectrons.com

Discounted Membership Renewal Fees

Select the Membership Category (Enter Cost at Right)	**Unit Cost**	**Extension**
Non-Resident - Individual or Family Membership Renewal	$65.00	$
Menomonee Falls Resident - Individual or Family Membership Renewal	$45.00	$
Junior (18 Years or Younger by July 1st) Renewal	$45.00	$
Single Senior (65 or Older by July 1st) Renewal	$45.00	$
Additional Costs		
Add if renewing after January 15th, 2021	$15.00	$
Add if renewing after February 1st,2021	$20.00	$
Deduct if you paid initiation fee previous year	**-$20.00**	-
STEM Student Membership Academy (IP Qualified)	N/C	
Calculate Total Membership Cost Here		$

Incomplete forms will be returned to the applicant. Failure to provide proof of AMA membership will result in suspended flying privileges until proof such as a photocopy of AMA card or confirmation from the AMA is provided to the club secretary.
Applications for AMA membership are available from the club secretary or on line. Acceptance into membership of the Flying Electrons Inc. is contingent upon Club sponsorship, Board approval, and completion of all requirements of The Flying Electrons Inc. bylaws and based on the information provided herein. All fees are payable in advance.

Member Application Form 12/07/2020 TJ

NEW MEMBER APPLICATION

You must include a photocopy of your AMA card to receive your membership card!

☐ Check this box if you have updated your address, email, phone…etc.

☐ Check this box if this is a **"STEM Student Membership Academy"** Application

AMA NUMBER: _____ FAA NUMBER: _____

(Please include copies of both cards)

NAME: _____

ADDRESS: _____

CITY: _____ STATE: _____ ZIP: _____

EMAIL: _____

PRIMARY PHONE: _____ DOB: ____/_____ (month and year only)

RADIO CHANNELS CURRENTLY USING:: _____ , _____ , _____ , 2.4 GHz: _____

SPONSOR (Required for new membership): _____

By signing this application I agree to abide by the Field Rules.

Signature: _____ Date: _____/_____/_____

Make checks payable to The Flying Electrons, Inc.
Mail to: The Flying Electrons
Chris Milbauer
4952 N 106th Street, Milwaukee, WI 53225
414-750-2740
chrismilb@att.net
Academy of Model Aeronautics, 1-800-I FLY AMA, www.modelaircraft.org

The Flying Electrons Inc., www.flyingelectrons.com

MEMBERSHIP FEES AND TERMS

Select the Membership Category (Enter Cost at Right)	**Unit Cost**	**Extension**
New Member Initiation Fee	$50.00	$
Non-Resident - Individual or Family Membership	$75.00	$
Menomonee Falls Resident - Individual or Family Membership	$55.00	$
Junior (18 Years or Younger by July 1st)	$55.00	$
Single Senior (65 or Older by July 1st)	$55.00	$
Additional Costs		
Add if renewing after January Club Meeting	$5.00	$
Add if renewing after February Club Meeting	$10.00	$
Deduct if you paid initiation fee previous year	**-$20.00**	-
STEM Student Membership Academy (IP Qualified)	N/C	
Calculate Total Membership Cost Here		$

Incomplete forms will be returned to the applicant. Failure to provide proof of AMA membership will result in suspended flying privileges until proof such as a photocopy of AMA card or faxed confirmation from the AMA is provided to the club secretary.
Applications for AMA membership are available from the club secretary or from most area hobby stores. Acceptance into membership of the Flying Electrons Inc. is contingent upon Club sponsorship, Board approval, and completion of all requirements of The Flying Electrons Inc. bylaws and based on the information provided herein.

All fees are payable in advance.

Member Application Form 6/29/2020 TJ