Radio Control Flyers Unlimited
Flight Plan

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Current News

There is a change with the August club meeting. We will be having it at the club field at 10:00 am. We will plan on having a fun fly meet with lunch served. The lunch will be free, but if you want to help out, it will be greatly appreciated. The free lunch will be offered to any member's immediate family also.

This meeting will include the proposed paving of the flying field. The discussion will be focused on the method to get the remaining $20,000 needed to perform the job. This discussion will included having a one time assessment fee from each active member.

The AMA is having fee increases effective after September 15, 2015 for the 2016 year. You may still renew using the current rate. You may renew for up to two years using the current rate if you apply and pay your fees prior to the increase taking place. Go to the AMA web site for more information.

The pattern contest in June was a success. More flyers participated this year then any previous years. The club has accepted $350 from the event.

PILOTS CORNER

Don't cook your speed control!

Avoid these common power system mistakes

Electric fliers all have one thing in common regardless of the size or type of models they fly—the electronic speed control (ESC). It doesn't matter if you fly helicopters, airplanes, giant-scale, indoor, or micro models; at the heart of your power system is the speed control, and if it's unhappy, you will be too. The costs and types of speed controls vary in every aspect and that includes quality. The one constant, however, is your understanding of how to make them last, which in the end, saves money and your aircraft!

Quality Matters

This pretty much covers everything. Quality motors, connectors, speed controls, installation, solder joints, etc., but let's talk about components. When encountering speed control problems, we don't often think about whether they might have been caused by a cheap (poorly made) motor, but it can and does happen. I recently experienced a catastrophic failure in a foam jet that caused the speed control to melt and actually burn its way out of the bottom of the aircraft. Parts of it were left inside, but it unsoldered itself and melted completely. Upon post-mortem inspection, I found that the magnets inside the motor were unevenly spaced and one had actually come loose and been chewed into pieces as the motor spun. The funny thing about electric motors is when something starts to go wrong, the motor will just ask for more current so it can work to overcome it. My on-board data logger showed normal current at takeoff and shortly after, it began to climb until it spiked off the scale. This is an indication that the motor was failing and the binding of the magnet chunks caused the excessive current spike that subsequently melted the speed control. Some speed controls have over-current protection and others don't. Look for one that does! This doesn't guarantee that it won't be

damaged by a sudden failure like mine, but it just may help save the speed control. This was an expensive failure due to a poorly made motor.

Be Cool!!

Install your speed control in a place where you can get maximum airflow across it. Remember that if you let cool air into the fuselage, you have to provide a place for the air to get out too. That exit hole should be about twice the size of the inlet hole. Heat is the enemy, so the cooler you keep your speed control, the happier it will be.

Size Matters

The quickest way to get experience buying speed controls is to buy them too small for the application—meaning the motor voltage and current requirements along with the BEC (battery eliminator circuit) requirements if you're using one. If you're sizing your speed control based on the maximum requirements of the system and you're just barely meeting them, go to the next size up. If you can use one with a heat sink, do so. If your BEC requirements match or exceed the ratings of the speed control's BEC, then choose a different speed control or disable the BEC and use appropriate receiver power. Remember, if your BEC fails, you lose the airplane.

Proper Soldering

Many of the connectors in our electric power systems need to be soldered to wires. Always use properly sized wire gauges and quality connectors. Even the best soldering job can't make up for bad wire and poorly made connectors. A properly soldered joint is shiny! Your components can't be too clean, so clean the components before trying to solder them. Your fingers will get oils on everything, so be careful with what you touch. Tin both surfaces before joining them and then use just enough heat to let the solder flow between the two pieces. If the iron is oversized and too hot, it will end up being a dark, burned joint. If the solder flows and ends up nice, shiny, and bright—you've been successful.

Wiring Basics

A question I often hear is, "Is it better to lengthen the wires from the battery to the speed control or to lengthen the wires from the speed control to the motor?" Online forums are full of ideas, opinions, conjecture, and debate over this question. Let me give the simple answer first; it is better to lengthen the wires from the speed control to the motor and keep the battery wires as short as possible. That's it, plain and simple.
The debate arises over resistance and inductance. It's argued that using a larger gauge wire reduces the resistance, making Recipe for a Cooked longer battery wires acceptable. While it does reduce resistance, it doesn't take into account the increased inductance it causes. Proponents of lengthening the battery wires say that can be overcome by adding additional capacitors to the front of the speed control. This is a patch, not a fix. The speed control comes with capacitors installed as determined by the manufacturer for its intended application. Without specific knowledge on current and how good the flyback diodes are, along with the switching speed of the FETs, voltage rating of the FETs, and types of FETs, you're grasping at straws. If you do know those things, you'll still need to do a lot of math to figure out the appropriate caps to add.

There is no standardization between connector types, so most of us end up using an adapter at one time or another. Be sure to wire and solder them carefully. Double check the adapter before using it. The goal in electrics is to reduce the possibility for increased resistance in our circuits. This causes heat and wasted power. It's best not to use an adapter, but if it's necessary, be sure it's properly sized and constructed. Wire nuts have their places in home wiring construction, but NEVER belong inside our aircraft.

Check your manufacturer's website to see the limits of their connectors. If you're pushing the limits of your 4mm bullet connector, then go to a 6mm size. The same applies when you're using EC3s or whatever brand. You want the most surface contact and least amount of resistance you can get for maximum efficiency from your system.

NEVER mismatch connectors. I've seen Dean's Ultras jammed into female bullet types and that is a recipe for disaster. I've also seen spade plugs shoved into the grooves between the contacts on a male bullet connector. Likewise, alligator clips have no place in an electric airplane. They may seem like a universal fix, but it's actually a universal mistake. All of these things can be inefficient, but more importantly—they are all dangerous and create a fire hazard

No one wants to cook their speed controllers! As with everything else involved in our hobby, it's the small details that matter the most. Avoid these common mistakes and you'll maximize your airplane's efficiency and greatly lengthen its lifespan. –BY GREG GIMLICK

Cash Flow Report

Income		Expenses	
Club Revenue (including initiation fees, field assessment fees, Donations, and Events)	$360.00	Lease	$823.50
		Toilet Rental	$140.00
		Transfer to savings	$5,000.00
Totals	$360.00		$5,963.50

Last Month's Total ……..	$8,228.28
Income ……..	$360.00
Expenses ……..	($5,963.50)
Balance …….	$2,624.78

The August Club meeting is scheduled for:
Sunday, August 16, 2015 at 10:00 am
at the club flying field.