TAILSPINNERS

Volume 52 Issue 9 ***June 2007*** ***Editor: Anthony Puca***

July MEETING

PLEASE NOTE!! The June meeting will be held at Ridge View Academy on July 10th, 2007 at 7:00pm.

If the gate is closed, drive to the right of the small building and press the button on the speaker box and when prompted state your name and state that you are with Mile Hi RC and are coming in for the club meeting. When you get to the main building, you will have to sign in, turn in your car keys, and get a visitors badge. They will then direct you to the meeting room. Come a little early to get through the security routine.

RIDGE VIEW ACADEMY IS A NO SMOKING FACILITY. SMOKING IS NOT ALLOWED ANYWHERE ON THE PROPERTY.

FLIGHT LOG FOR THE June MILE HI RC CLUB MEETING

No minutes taken

=== END OF MINUTES FOR THE June CLUB MEETING ===

FLIGHT LOG FOR THE July MILE HI RC BOARD MEETING

- CP Event
  - Working on brochures to include donation forms to generate revenue
  - Sandy wants to make sure the club and all donors are represented on the brochures
  - Working on updating website, especially with Sean's McMurtry picture (demo pilot)
  - Working on potential vendor space for $100 booths
  - Working on KEZW for airtime and a possible live-feed during the event
  - Call into Fox 31 news as well, based on a contact from John N.
  - Pilots are all arranged
  - Covered contingency plans for a potential rain-out, in which case the event would take place on Sunday (actually raining only, not just cloudy!)
  - Still need stickers, working on tents (1 for cooking, 2 for spectators, and 2, 10'x10's for pilot registration, auction, and drawing) and chairs
  - Ask for donations for parking, decided to go with $15 landing fee
  - Something to guide the guests to their seating area (colored triangular flag streamers in container)
  - Work Day needed before the event
  - Volunteers needed – need to get a sign-up sheet going for the next club meeting
  - Mark will bring his giant generator for power
  - Going to use the east/west runway ONLY, so tents will be adjacent to the entryway, with one on each side of the fence (facing north).
  - Need a handicapped port-o-potty
  - Sandy will work with the ROTC to do the colors presentation (or maybe the Junior Marines)
- 134 members

    - Mark brought out more flyers
- Events
    - Several volunteers, we'll do Italian sausage with veggies $6 for 40 people
    - George sent the flyer to the clubs in the states around CO. Need to see if Anthony has gotten any out to the hobby shops.
    - Open flying after the event (1 o'clock? George thinks it's on the flyer)
    -
    - August 4th Combat Event (JJ is the CD)
    - Needs a sign-up sheet for both of these events for the next club meeting
    - Several pilots from around the country (two classes)
    - Working on food
    - Air Scharnell will donate prizes
- July 10th is the Ice Cream Social (John thinks there are 37 paid members)
- Need to announce elections in September
- Plaque and pictures ready for Ridge View
- George will host next board meeting
- Field maintenance – Gary Brady will do this another year
- Field acquisition – not much to report, still need to do the layout site plan, grading looks like it has been done
- No word on the other 80+acres
- Unfinished business remains the same
- New business – board nominations, announcing elections in July - Board members need to be nominating committee for next year
- Announcements – another e-mail will go out on the July 10th meeting – next Board meeting on Jul. 30th will be at George's house
- Carmen Leonardo will donate $20 gift cards to each meeting!
- Went over duties and the Board Operations manual. We should have it just about put together by the next Board meeting. John will put together the binders and I will collect all forms that are in digital format Member appreciation day is scheduled for August 25th, pig roast? Can we afford it? Let's get an up-to-date $$ amount from John Ballman on what we can spend
- Year-end banquet will be September 22nd – still need a site, George suggested White Fence Farm
- For the next Board, we'll make it clear that the Field Safety Officer is appointed by the President

=== END OF MINUTES FOR THE July MILE HI RC BOARD MEETING ===

Basics of Electric Flight – Notes from the August Program - Roman Fyler and Electrics Basics…

OK, here's how it all shakes out. The basic power required to fly an electric model is as follows:

Direct Drive Systems 60 watts/pound
Gear Drive Systems 50 watts/pound
Mild aerobatic performance 70-80 watts/pound
For all-out aerobatics 100-110 watts/pound
3-D performance 150 watts/pound or more

The above numbers are based on models with wing loadings from 8-16 oz/square foot. As with gas models, higher wing loadings require more power since they must fly faster to support the added weight. By the same token, a lightly-loaded model with a wing loading in the 3-5 oz/square foot range will fly very well at 25 -30 watts/pound.

What's a 'watt'; and where can I get some?
Wattage is the term used in electric flight to relate the level of power that an electric drive system will produce. To relate it to terms we're familiar with, 746 watts = 1 horsepower. To calculate the wattage delivered by a given system looks like this: amps x volts = watts. So where do these numbers come from and how do I know how many volts and amps are needed to fly a given model?

Okay, let's say you want a mildly aerobatic sport model with a 14 oz/square foot wing loading that will weigh in at 2 pounds. We already know that the power requirement for a model like this is about 70 watts/pound, so we're going to need to generate about 140 watts. Let's assume that you are going to use an eight-cell Ni-Cd battery. At 1.2 volts per cell, eight cells will deliver 9.6 volts. To arrive at the necessary current draw to achieve 140 watts, simply divide 140 (watts) by 9.6 (volts) and you arrive at 14.58 amps.

Now, let's assume that you have a three-cell Li-Poly battery for the model, which is rated at 11.1 volts. The formula is the same; 140 (watts) divided by 11.1 (volts) = 12.6 amps. As you can see, as the available voltage increases, the lower the current draw needs to be to deliver the necessary wattage.

Now here's something to consider when selecting your system: the higher the current draw, the shorter the flight duration on any given battery. Therefore, the ideal setup would be to use a higher-voltage battery with lower current draw for maximum duration. On the downside, when using Ni-Cd and NiMH batteries, as the cell count goes up, the weight will increase significantly as well. It works that way with Lithium too, but Lithium batteries are dramatically lighter then the old "round" cells.

Okay, let's say we're going to use an 11.1 volt Li-Poly battery. All we need to do now is select a motor that will swing enough propeller at 12.6 amps to fly the model at a top speed of around 40-45 mph and we're in business. Now that you know the parameters, visit your local hobby shop and select a motor that fits that description.

Gear Drive vs. Direct Drive: Why is one better then the other?
Well, it all depends on the kind of performance you're looking for. If you're looking to go fast, go with direct drive. Going fast requires a high-pitch propeller turning high rpm. The formula to calculate propeller pitch speed is an easy one; it looks like this: rpm x pitch (in inches)/1056 = mph.
Let's say that you are turning a 7-6 propeller at 14,000 rpm. 14,000 x 6 = 84,000/1056 = 79.55 mph

Now, let's assume you are setting up a slow, relaxing park flyer with about a 5 oz/square foot wing loading. If we swing a 9-7 propeller at about 3,500 rpm, we'd be looking at a top speed of roughly 23 mph. To swing that much propeller with a small, light drive system, we would use a gear drive unit at a very low current draw and a small, light battery.

Again, to make a known comparison, we can relate all this to riding a 10-speed bicycle. A gear drive swinging a big propeller is like riding your bike in low gear. You pedal like mad with little effort, you don't go very fast, but you can climb steep hills with ease. The direct drive system could be compared to riding the bike in high gear. It'll really go fast, and even though you're pedaling slower, it requires considerably more effort.

What all this boils down to is "propeller disc loading." We all know what wing loading is: it's the amount of the model's weight that each square foot of wing must carry. Prop disc-loading works the same way. A large propeller will be more lightly loaded, thus delivering more torque then a smaller propeller turning high rpm. The tradeoff, of course, will be speed.

One more thing to cover and we'll give you a rest. Batteries are rated in "voltage" and "amperage." Voltage dictates the amount of power the battery will deliver. The amperage rating dictates for how long the battery will deliver that power. To relate that to glow fuel, consider the voltage as nitro content. High voltage (nitro) means more power. The amperage is related to the quantity of fuel, or simply the "size of the tank."

To figure the size of battery needed, let's go back to our 140-watt sport airplane. If we're pulling 14 amps from a 1400 mAh (1.4 amp hour) battery, we will have full power duration of five to six minutes. In the real world, with proper throttle management, you'll see flight times of approximately eight minutes. These are common flight times, even with liquid-fueled models.

To arrive at that number, divide the battery amp rating by the current draw: 1.4 (amp hours)/14 (amps) = 0.1. Then take 60 (minutes per amp hour) x 0.1 = 6 minutes. Now, to double the duration, you must either cut the current draw in half (to 7 amps), or double the battery size (to 2800 mAh or 2.8 amp hours)—again we see tradeoffs. To reduce the current draw, we can use a larger, higher-pitch propeller turning slower with very little weight penalty. If we double the

size of the battery capacity, the weight penalty is quite high unless we go over to the new Lithium batteries in which we will discover we have benefited from a tremendous weight reduction, but at a higher price then conventional batteries.

To get started, work with a known good design, and use the recommended equipment that has been proven to work. Talk to the people who are successful and copy what they're doing. The one thing I do know about modelers is that they are always willing to share their knowledge with those interested in what they are doing.

CLASSIFIED

Mile Hi R/C Official Wear – Winter Jackets

Prices are as follows: S-XL $60.00; 2XL $61.50; 3XL $63.00; 4X$64.50; 5XL $66.00 Prices do not include tax**.**

Winter jackets have your first name and AMA number on the front and the club logo on the back. The jackets appear to run on the small size so we recommend ordering one size larger than you normally wear.

Do you have other embroidery needs, Contact Phil, He can take care of all of your customized embroidery needs.
Contact Phillip Kenney
(303)369-7044
fargophil@comcast.net

Mile Hi R/C Official Wear

Hats: Summer Edition (Mesh on top for venting) Blue, Club Logo up front $12.00 Winter Edition (full twill) Blue with Club Logo up front $12.00

3" Patches $5.00

All Items sold at Club Meeting!!

Editor's note

My email address for any submissions is Puca_Anthony@emc.com. If you have a new plane picture, a building tip, an item to sell, or anything else that might be of interest to your fellow club members, please let me know! Also, if you have sold any of the items or want to update any of the items currently shown in the classifieds, please let me know so I can make the appropriate changes.

These local businesses support our club through donations and discounts on material for the club. Please show your appreciation of by giving them your business.

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