TAILSPINNERS

Volume 52 Issue 7 ***April 2007*** ***Editor: Anthony Puca***

November MEETING

PLEASE NOTE!! The May meeting will be held at Arapahoe County Fairgrounds on May 1st, 2007 at 7:00pm.

Arapahoe County Fairgrounds
25690 E. Quincy Ave.
Aurora, CO 80016

Head east on East Quincy Avenue approximately two miles from E470 to the new County Fairgrounds, on your right.

FLIGHT LOG FOR THE APRIL MILE HI RC CLUB MEETING

1) **Meeting Called to Order**
   a) Minutes approved as posted on website

2) **Welcome and introduction of Guests or new Members**

3) **Quorum** (Must have 14-15 members present, which represents 10% of voting members). Quorum met

4) **Read & Approve previous meetings minutes** – *Anthony Puca, Secretary*

   (a) Not present – minutes accepted as posted on website

5) **Treasurers Report** – *John Ballman, Treasurer*
   a) Not present
   b) Club received Xerox rebate
   c) Xxxx.xx in checking

6) **Investment Report** – *Jerry Warrington, Investment Officer*
   (a) xxxxx.xx in Savings
   (b) Report approved

7) **Membership Report** – *Mark Johnston, Vice President*
   (a) 131 members
   (b) 2 associate members
   (c) 115 voting members
   (d) 1 new member

8) **Contest/Events Committee Report**
   a) Mile Hi Madness – May 5th
   (i) Randy Hodged CD
   b) Ridge View Day at Mile Hi – May 19th

9) **Field Maintenance Report** – *Gary Brady*

10) **Safety Report** – *Chuck Brant, Safety Officer*

11) Field Acquisition Report – George Kerr /John Neumeier

(a) The site for the runway is set
(b) There are many factors we had to take into consideration and to satisfy the functionality of the fairgrounds
(c) We want everyone to have the opportunity to see this location – so come to May Club meeting

12) Unfinished Business

13) New Business

14) Announcements

a) Next Club Meeting – May 1st @ the Arapahoe County Fairgrounds

15) Drawings (Hobby Store Gift Certificates & Fuel)

16) Program – **"Wings over the Rockies Videos"** – *Bob Bergin*

17) Meeting Adjournment

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

FLIGHT LOG FOR THE MARCH MILE HI RC BOARD MEETING

1. Minutes were approved.
2. Treasurer's - have $xxxx + $500 rebate from Xerox that came in = $xxxx.
3. Investment - John was going to get online report.
4. Membership - 131, 1 new, all AMA registered
5. Contest/Events - thinking about a nominating committee for elections
6. Field - Work day - decided not necessary.
7. Safety - Getting some slots/space on the board for spectrum radios for the AMA cards.
8. Field - Working lease, will probably need to finance a runway
9. Unfinished – passed
10. New - possibly have May meeting at fairgrounds
11. Announcements - probably will be a $750 fee to file for 501 submittal
12. March program - ? Robotics
13. Meeting adjournment

=== END OF MINUTES FOR THE MARCH 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.

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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.

Air Scharnell	***Air Scharnell*** **6276 East Pine Lane** **Parker, CO 80134** **(303) 617-9777**
	***Colpar Hobbies*** **804 S. Havana** **Aurora, CO 80012** **(303) 341-0414**
Rocky Mountain R/C HOBBIES rmrchobbies.com	***Rocky Mountain R/C Hobbies*** **700 South Buckley Rd.** **Aurora, CO 80017** **(303) 671-5300**
Metrolink Realty.com 303-699-8577	***Metrolink Realty*** **(303) 699-8577**