

Mid Hudson Radio Control Society

Pilot Briefing

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President's Corner

Hi members,

For most of us the flying season is over. The year came and went very fast. From the comments I hear from members it sounds like Mid Hudson had a good year. While I did not make it to Red Wing too much I did spend some time at the Wallkill field. I was at this field a few times with members approaching 20 people and all having a good time flying and talking airplanes. It has been really good to see the club functioning so well. Everyone works together and lets everyone get a chance to fly. It is great sportsmanship and I am glad to see the club functioning so well.

There were some unique multi plane flight this year at Wallkill. A few multi war bird flights, as many as 4 if I remember right. There was a cub day where there were 3 or 4 1/2 scale cubs taxing down the runway and all staging for takeoff on the runway at once. Pretty neat to watch all this going on.

The Jamboree Pilot attendance numbers were up and there were some great scale planes there this year. Keith Zimmerly donated his 50% Standard D1 to the Aerodrome on the last weekend of the year. I had an opportunity to work with Keith for about 2 hours assembling his airplane and talking with visitors in the Museum hanger. He is a very interesting person. He builds these great oversized aircraft, fly's them for a year or two and then donates them to a very fitting museum or business where he feels the aircraft will have a good home.

The November meeting will be our board of elections and so far there has been no one knocking the door down to take any of the board positions, so the board slate will be pretty much the same as 2014. Anyone wishing to run for office and help run the club will have a chance to step forward at the November meeting. Also at the November meeting will be the annual Budget review for 2015 and a vote on the budget. There are no new surprises, as this years budget is pretty much the same as 2014. Hope to see everyone at the meeting.

Warren Batson President

Intro

Greetings from your new editor, J e r.

We owe Ron a hearty thanks for his service as editor, he leaves large shoes to fill.

To those who haven't flown with me yet some words of introduction. I fly only EP, electric power, sport and pattern models. I have a few scale models awaiting completion this winter. My knowledge of IC gas is zero, closest I get to them is holding'em for my son Eric. Once I held for Don Serafin and his Matt Chapman and had to dig my heels in to keep it from moving. If you want info on gas, you'll have to contribute it because I don't have the expertise and do not want to disseminate bad info. Simply write it up send it via email to me, milosek@localnet.com.

Wallkill Field closed for R/C flying Tuesday September 30. What a year it was. We need to repeat it next year.

Models that caught my eye this year were dominated by Cubs. One day this year there were 3 of them formation flying. I missed that day but the talk in the pits said it rivalled the Warbirds. Flavio's Cub with a 20cc and modified muffler is a superb scale flyer, Ron Revelle's Cub with a 30cc is much faster and has more vertical performance. Ron pays for it when landing, he has very little sink which makes his landings long. There's also the blue clipped wing Cubs with a star burst on the wings flown by Ron Salisbury and Warren.

Warbirds, P-47's and P-51's, flown by Wayne Curtis, Rob vandM, Kevin are always nice to see in the air together.

WWI planes by Bob Allen, Ron Prestin and Rob vandM seem to come out just before the Jamboree and we are all patiently waiting for the 1/3 scale D7's of Don, Eric and Bob.

Eric Milosek flies a red AeroWorks Laser 200 with a DLE 35, his first large gasser. His starting procedure is impressive. After his first flight of the day, it takes 2 flips to prime and is running after the next flip or two. Takeoffs presented a problem one day, wipedout the LG but he had

back in the air the next day.

Chris Hale flies a PA Addiction.....slowly, rarely leaving the mowed area.

Charlie Knight flew his big P-51 but seems to prefer a Citabria.

Rick Rizza flies his D7, U2 and a host of ARF's.

Tuesday is retiree's day. Gene Terminello gets'em out with nothing smaller than ¼ scale. He's joined by Lou Callen, Don Serafin, Frank Pigniello, Ron Knapp, Bill Lederer and his crew chief, Ron Revelle and myself. These guys are diehards who come out all the time. There's a movement to keep Tuesdays going by moving to Redwing, if you are interested drop a note to Gene at

eterm59@aol.com asking to be added to his email list.

We had our share of mishaps but with some effort their number can be cut next year and more airplanes will go home in the same number of pieces they came in. The most common mishap was damaging the LG, this is one area that deserves more attention.

Building enjoyment

Radio Control Scale Builder provides the best build threads with tons of pictures and some excellent writing. One of my favorite contributors is Alan and he's recently started a new model. You can monitor his build by visiting

http://www.rcscalebuilder.com/forum/forum_posts.asp?TID=22279&PN=2&TPN=1

E-Power

I want to introduce you to the terms commonly used when talking about electric powered models. This will give us the common ground needed when discussing batteries, chargers, ESC (electric speed controller) and motors.

EMF, AMPS & OHMS

EMF, Electro-Motive Force, measured in volts, is the force that causes current to flow. Current is the movement of electrons and is measured in amperes, commonly referred to as amps.

Resistance inhibits the current flow, it is analagous to a restriction in a water pipe or a lane closure on a highway that causes traffic to slow down. It is measure in ohms. Low resistance is desirable in conventional wire but high resistance wire is also useful for toasters, heating elements and wire to cut foam wing cores

Volts, amps and ohms are all related by Ohm's Law, the basis of all electricity. You need to know Ohm's Law like the back of your hand, its that important AND is not complicated! Ohm's Law states that EMF (volts) is equal to current(amperes) multiplied by resistance(ohms).

It is commonly written as,

$$E = IR \quad \text{where } E \text{ is volts, } I \text{ is amperes and } R \text{ is Ohms}$$

Don't let the symbolism throw you, you use it every day when momma asks you how long it will take to drive to see the kids. When you respond, "One hour.", you have solved the distance, rate and time equation written as,

$$D = RT \quad \text{where } D \text{ is distance, } R \text{ is speed(mph) and } T \text{ is the time(hours)}$$

Notice that to get the time, you really rearranged $D = RT$ to $T = D/R$. Time equals distance divided by speed. Truck drivers do this all the time, for instance how long will it take to travel 60 miles if I go at 60 miles an hour to get there? He uses the formula $T = D/R$ and places the correct values for D and R, 60 mph and 1 hour, does the division and gets 60mph

Now, let's get back to Ohm's Law. How much voltage is required to get 10 amps flowing through 12 ohms resistance?

$$**E = IR = 10 amperes times 12 ohms = 120 volts**$$

120 volts, where did you hear 120 volts? Its the common house voltage used in all wall sockets. You also know that wall socket is only good for 15 amps. If you draw more than 15 amps you'll be walking to the circuit breaker panel to reset the CB you just tripped.

What is the LOWEST resistance you can use in that 120v circuit protected by a 15amp breaker? Now you do the same thing a truck driver does when he solves for time, but you use volts and amps.

$$**R = E/I = 120volts divided by 15amps = 8ohms**$$

Any device with a resistance LESS THAN 8 ohms will trip the CB. Next time momma trips a CB tell her to increase her resistance to greater than 8ohms, you'll sound knowledgeable but will still have to get up and reset the CB.

Let's move to cars. The typical car battery is 12v and is rated in terms of CCA (cold cranking amps). If your battery's CCA is 120amps, what is the resistance of the starter, solenoid and wiring?

$$**R = E/I = 12v divided by 120amps = 0.1ohm**$$

Notice the LOW resistance of 0.1 ohm, if you used that with a 120v wall socket, you'd draw 1,200amps and have a very unsafe condition but because the car battery is only 12v, you are within its CCA rating.

Let's move on with more math; remember your third grade teacher telling you, "You'll need this someday." Well, now's that someday. Electricity does work for us just like your car motor. Your car motor is measured in horsepower, electrical power is measured in Watts
What's a Watt?

Watts = EI = volts times amps

That car starter takes 1,440 watts from the 12v battery at 120amps, 12 times 120 = 1440.
By comparison, the 120v wall socket is capable of supplying 1800watts, 120 times 15 = 1800.
Using your high school algebra, just like the truck driver did, we can rewrite the solution for watts,

$$\text{Watts} = EI = IR \text{ times } I \quad \text{remember } E = IR, \text{ just substitute } IR \text{ for } E$$

because of my limited PC software I can't use the squared symbol, but "IR times I" is the same as saying, "I squared R."

Similarly, if you substitute E/R for I, Watts = EI = E times E/R, which is E squared divide by R.
We are concerned about watts because electric motors are rated in watts, more watts is more power. Also, you can determine the number of watts your model will require if you know its weight and type of performance desired. 200 watts per pound of weight is required if you desire aerobic performance.

How many watts are required for a 6lb model with aerobic performance?

$$\text{Watts} = 6\text{lbs times } 200\text{watts per lb} = 1,200 \text{ watts}$$

How much current must be supplied by a 24v battery to get that 1,200 watts? In other words, 24 times what number will equal 1,200 ?

$$\text{I amps} = 1200 \text{ watts divided by } 24\text{v} = 50\text{amps}$$

Are there any other battery voltages that will give us 1,200 watts? Yes! 1,200 divided by any number will give the required voltage. See the following chart for some but not all combinations.

Volts	Current	Watts
1	1200	1200
2	600	1200
3	400	1200
4	300	1200

5	240	1200
6	200	1200
8	150	1200
10	120	1200
120	10	1200

Notice in the chart above as the voltage increased the current decreased but watts remained the same.

Continuing on with our 1,200 watt model, what is the resistance when the 24v battery and 50amp system is used?

$$R = E/I = 24v \text{ divided by } 50\text{amps} = 0.48 \text{ ohm}$$

You'd get the same answer if you used Watts = I squared R and solved for R,

$$R = \text{Watts}/I \text{ squared} = 1200 \text{ divided by } 50 \text{ times } 50 = 1200 \text{ divided by } 2500 = 0.48 \text{ ohm}$$

With this info you can immediately eliminate all motors whose resistance is greater than 0.48 ohm. This spec is commonly referred to as Ro in motor specs.

For typical motor specs see :

https://www.aero-model.com/8_67_889/Brushless-Motors_Hacker-Brushless-Motors-A40-Series/A40-10S-V2.html

Awhile back we talked about car horse power and electrical power. Can we compare horsepower and watts?

I'm glad you asked because the answer is, "Yes." In fact, many European motors are rated in watts instead of horsepower. One horsepower is equal to 745.7 watts, let's make it 746.

Your 3hp, 30cc IC engine, is comparable to a 2,238 watt electrical motor, 3 times 746 and your 300hp car motor is comparable to a 223,800 watt electric motor. 223,800 watts is commonly referred to as 223.8Kilowatts or 223.8KW.

Next month we talk about batteries.

MHRCS Forums

Have you visited MHRCS Forums recently? Its THE place where you can find activity at Wallkill and Redwing flying fields, events and other topics of interest to R/C modelers.

Its on the internet at: <http://www.mhracs.com/forum/>

You'll need your password that was emailed to you by Flavio.

While you are there sign up to be notified of new additions to your favorites by using the notify/unnotify feature. Its a great way to inform members when you go flying.

Quiz time

1. A typical flashlight uses 2 C size cells in series to get 3volts to a light bulb that measures 3 ohms. How much current flows when switched on?
2. How much current does a 100 watt 120volt light bulb draw?
3. How many watts does a clothes iron consume at 120volts and 10 amps?
4. What is the wattage of your electric starter used at the field if it runs off a 12v battery and draws 15 amps?
5. What voltage battery is required to drive a 0.4ohm glow plug with 3amps?

Answers: 1amp, 0.833amp, 1200watts, 180watts, 1.2volts