Prop Kicks

The Official Publication of the Cloud Kings R/C Club   **Charter Club # 579**

President: Bill Losey
Secretary: Tom Lauletta
Safety Officer: Brian Porter
Public Relations Officer: Alvin Johnson

Vice President: Pete Jones
Treasurer: John Anderson
Field Marshall: Bob Fling
Chief Flight Instructor: Bill Vandenberg

August 2007

President's Corner

• Good news! Our annual Fun Fly was another smashing success! Of course it would not have been possible without all the fine teamwork by you members. I appreciate all the planning, hard work, and personal time so many of you gave to make this, our premiere event, a home run hit - over the fence.

• Our next meeting will be on August 14th at West Field. Please try to be there to help resolve a few important issues that the club will have to decide.

• The weather has been good – but the fliers few? We have some lovely flying sites to use - the only thing missing is about half of our members. Bring your planes and come to our meeting next Tuesday – come early, stay late, and enjoy the nicely groomed and well benched facility.

• We would like to get come action going at Harris Field. Walter keeps the grounds ready for our use, and a new picnic table as well as 4 setup benches are now available there. Every Wednesday and Thursday, plus every other weekend this field is open for our flying pleasure. Give it a try and see if you don't like the size of the runways.
Bill Losey – President

New Members:
Mark Cordrey

Prospective members:
Oliver Robins Age 12 sponsored by Bill Losey
Don Ham sponsored by Leif Thomson
Jim Vascauage sponsored by Bob Fling
Scott Graham, sponsored by Dale Adams
Rachel Kinney, sponsored by Louis Kinney
Matthew Kinney, sponsored by Louis Kinney
Bill Hyde, Pete Jones will sponsor Bill

Next Meeting: August 14, 7:30 PM at West Field

Annual Picnic: September 8 at West Field

Oxford Fair: August 30-Sept. 3rd 2007

Octoberfest Vintage Fly-In: October 6 and 7th at West Field

"Electrifying News"

Power what is it?

Sparky heard some chatter about electrical power, and he's been trying figure it out. Let's see if we can't dig in, roll up our sleeves, and find out *Watt* it's all about.

For starters let's see how *Watts* are related to Voltage, Current, and Resistance. For you guys who want to play with the numbers – here goes. Voltage is usually denoted by the symbol (E) after the E in Electromotive Force, or (V) for Volts. Current by the symbol (I) standing for Intensity of current flowing, or (A) for Ampere. Resistance by the symbol (R)
representing the Resistance to current flow, or the Greek letter Omega (Ω). Lastly, the Watt is identified by the symbol (P) standing for Power, or (W) for Watts.

Watt's Law

Basic Formulas:

1. (P = I x E) Current times Voltage = Power

2. (P = I² x R) Current (squared) times Resistance = Power

3. (P = E² ÷ R) Voltage (squared) divided by Resistance = Power

Application

In formula (1) simply multiply the Current (in Amperes) by the Voltage (in Volts).

In formula (2) Current (in Amperes squared) is multiplied by the Resistance (in Ohms).

In formula (3) Voltage (in Volts squared) is divided by the Resistance (in Ohms)

Now lets solve some problems: In formula (1) Let's assume we have a current of 12 amps and a voltage of 11.2 volts, therefore the power in watts will be 12A x 11.2V = 134.4W.

In formula (2) let's say we have a current of 15 amps and a circuit resistance of .5 ohms, now the power in watts will be 15A² x .5Ω = 112.5W.

Lastly in formula (3) we have a voltage of 22.4 volts and a circuit resistance of .8 ohms (The .8Ω is the internal motor resistance called impedance represented by the symbol Z, also measured in ohms), now to solve this problem we take 22.4V² ÷ .8Ω = 627.2W.

Now one more thing: Let's do the last problem again, only this time using only half the voltage 11.2V² ÷ .8Ω = 156.8W. You see where we have a squared function in the equation, and we reduce the voltage by ½ the power is reduced to ¼ its previous value. Interesting – Hum!

One Last point of Information

A HP *horse power* is a unit of power = 746 Watts, or 33,000 lb-ft per/minute (or 550 lb-ft per/second) of torque.

I smell something burning – Sparky's out of here!

Basic information to guide you in setting up an R/C electric plane:

Propeller 1047, 8040, 1170, 10x4 - what does it mean !

The first two numbers are the diameter of the prop - 1047 is a 10 inch prop. Oddly the 80 is an 8 inch prop. Second two numbers is the Prop Pitch or Blade Pitch. 1047 is a 4.7 pitch. Each revolution moves the plane forward 4.7 inches (if 100% efficient). Increasing the pitch will have an effect on RPM by reducing it. The MPH formula is Pitch * RPM/ 1056 = Pitch Speed in MPH. So a pitch of 5 and RPM of 20,000 is 5*20000 = 100,000 / 1056 = 94.7 mph pitch speed. Drag and weather conditions will slow the plane below that number, but it is a good indicator of the speed the prop is attempting to reach. Also static testing is not what you will see when your plane is moving. A moving plane will be able to reach a higher RPM, so this brings that formula into a realistic gauge of speed - but not thrust.

Propeller Pitch - why is this so important to understand ?

So what is the difference between an 11x7 prop and a 10x8. From above you can see that the 10x8 should move the plane further faster since it's a higher pitch. But it also increases amp draw. In a case where your amps goes too high you will actually degrade performance. Reducing the diameter of the prop enables you to reduce amps and reduce thrust. Also a smaller diameter prop will enable the motor to run higher RPM. This enables movement of power from thrust to speed. Increasing the pitch from 7 to 8 will consume some of that power and increase air speed. So if you plane doesn't have the climb you want and is too fast, increase the diameter of the propeller and decrease the pitch.

It is very worthwhile analyzing how your plane flys. I change props a lot to get a feel for what runs well and what I like. In some cases I want to run fast, so I put a 9x7 or 10x8 prop on the plane. But in other times I want high thrust and good speed. So I break out the very good Lipo's and put an 11x7 and in some cases a 12x8 for very high amp draw, short run times and a very high adrenaline rush.

KV - What is KV ?

KV is a means for motor manufacturers to inform you of the capability of the motor on an even field. It's the **number of revolutions of a motor per volt of power**. This enables comparison of motors without comparing batteries to drive the motor.

A high speed motor can run direct drive on a very small prop and at the same amp draw provide extreme speed, then gear the same motor and put a big prop on it and at the same amp draw provide a huge amount of thrust and lower speed.

KV 1300 and less - First gear - lots of thrust, but no top end - great for 3D
KV 1300 to 1900 - Second gear -Warbird flyers love this, I'm not sure if 3D flyers are in this area.
KV 1900 to 3000 - Third gear - Fast wings (pushers), Jets
KV 3000 to 4400 - Fourth gear - Jets, Helis with pinions, not appropriate for a gearbox.

Batteries– It is important to know how much current you can draw from your battery. Most batteries have a "C" rating which stands for "capacity" Example; if your lipo cell is rated 15C this means that you can draw 15 times the capacity and any more than this could result in premature battery failure. The capacity of your battery is rated in "mah" or "milliamp-hours" so lets use a common battery as an example and use units that we will use at the flying field:

11.1 volt 2100 mah 15C lipo The 2100mah converts to 2.1 amps for one hour and if we have a power meter "amps" would be the reading we would likely see upon measuring, and since you can only draw 15C that would be no more then 31.5 amps any any given time, so when you size your prop and use your power meter you would not want to exceed 31.5 amps (15 times 2.1) on the reading.

The Cloud Kings Radio Control Club
Of Oxford, PA invite you to

Octoberfest Vintage Fly-In

For all VR/CS and SAM models eligible per Vintage R/C Society and Society of Antique Modelers approved planes lists

October 6 & 7, 2007 West Field, Oxford, PA

- Hosted by the Cloud Kings Radio Control Club http://www.cloudkingsrc.org See the club website for maps and directions.
- Planes must meet rules of the Vintage R/C Society http://vintagercsociety.org and the Society of Antique Modelers http://www.antiquemodeler.org
- Open Flying – 4 flight lines.
- Trainermaster Concours Event – official 2007 VR/CS plane of the year.
- VR/CS Open.
- VR/CS Concours and SAM Concours.
- VR/CS Concours Scale.
- Class III VR/CS Pattern Competition per VR/CS rules (one flight, award plaques to third place).
- Technical Achievement award.
- Entrants must possess current 2007 AMA membership – VR/CS and SAM membership not required to fly.
- Flying field open 9:00AM Friday for early arrivals – NOTE: All I/C engines must have effective mufflers. 2-Cycle Engines 95db at 9 ft. 4-Stroke Engines 100db at 9 ft. SAM approved ignition engines may be used per the discretion of the CD. No limitations for electric power.
- Flying field closed Saturday except for official vintage flying events from 9:00AM to 4:00PM.
- Saturday lunchtime flying demos.
- Field open Sunday to general flying at 9:00AM.
- Camping on site – no hookups.
- Saturday Evening Banquet.

Contest Director: Mike Denest, 610-316-3570, mjd12k@yahoo.com

Headquarters Hotel – The Inn at Nottingham 190 Baltimore Pike Nottingham, PA 19362 (610) 932-4050.

Friday Gathering – 7 PM – Margarita's Restaurant 4 miles north off US 1 from the Nottingham Inn.

Saturday Banquet and awards – 6:30 cash bar, 7 PM dinner buffet – The Inn at Nottingham.

"Safety"

Brian Porter noted some safety issues in a written report. These are (paraphrased)
- No flying over the pits, spectator and parking areas
- All spectators, including children of members, are to be behind the spectator fence at all times, unless they are directly involved in the operation and flying of an aircraft.

Failure to follow these rules, which are part of the AMA Safety Code, **may** leave the club and field owner unprotected by AMA Insurance in case of injury or worse, by not following these rules.

Please review the AMA Safety Code and adhere to all the rules to avoid a disaster.

More on Safety:

- We have had complaints from our neighbors of flying too close to their homes, and noise.

We, as pilots are required to check our aircraft before flying them for proper noise level. I have asked many pilots what the db (noise) of their aircraft is? and these individuals respond "I don't know" Please check your aircraft to be sure as it is unacceptable to be over our limits of 95db for 2 stroke engines and 100db for 4 stroke engines. At the last meeting Bob Fling made a map of areas where we can safely fly and this map is posted at WF.

"Oxford Fair"

The Oxford Fair directors have requested that our club to have a booth and perform flying demonstrations at the fair. Hence, we (CloundKings R/C) will be putting together a demonstration team to do some flying for the public this year. The dates for the Fair are August 30th through Sept. 3rd. If you think you would like to be a part of this demonstration team please be at the Aug. meeting for discussion of this event and further info. The flying will be confined to electric only and will be a small flying area.

You can read more about the Fair at this web address http://www.theoxfordfair.org/index.htm