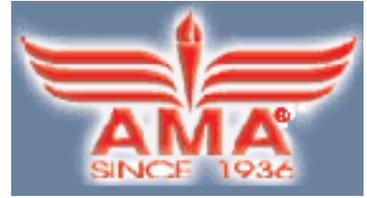


Springfield Radio Control Flying Club



AIRMAIL



www.angelfire.com/mo2/blacksheep/rc/index2.html

AMA CHARTER CLUB 394

MARCH 2006

VOLUME 18 NUMBER 3

NEXT MEETING

**Thursday
March 2
Library Center
4653 S. Campbell
Story Hour Room**

RADIOS -- AM, FM, PCM --
WHICH SHOULD YOU BUY?

by Bob Steele

Buying a new radio? What type do you plan to buy? Do you know what criteria to use in judging radio types or brands? I get a lot of questions on buying radios and I hope to clear some of them up in this article. The first and most important thing to realize is that the quality of the radio you buy can determine how long you keep the airplane you intend to fly it in. Most likely, you have a substantial investment in both time and money in your model and you don't want to see it crash and have your investment wiped out! We're not necessarily talking about price here, but quality.

A great deal of work has gone into receiver (hereafter abbreviated RX) design since the AMA began its frequency utilization plan a few years back and it has paid big dividends! The new Dual Conversion and/or

ABC&W RX designs are interference free except when someone turns on a transmitter (abbreviated TX) on your channel. In some cases, metal to metal electrical noise may cause a problem. I would urge you to check the manufacturer's RX specifications to be sure they meet industry standards. Compare one company's specs against another company, so you can be sure what you are buying! If you can't obtain specs for a manufacturer's RX, then don't buy from him!

Now, on to the transmitter! There are basically three types of TX's available, the basic four channel, the six channel with dual rates and maybe some other bells and whistles, and then there are computer programmable radios. (PCM radios have a computer in them, too, but we'll leave that until later.) Computer programmable radios are used by sailplane flyers, most all serious pattern and helicopter flyers, and a lot of sport flyers who want the versatility and 4 to 8 aircraft memory offered by these computerized marvels. Most beginners start by buying the basic 4 channel setup, and if they stick with the hobby, switch to one of 6 or 7 channel rigs as their skills increase and they demand more from their radio. The gimbals in the TX stick assemblies are the first link in the electronic chain that connects our hands to our

aircraft control surfaces. These stick assemblies are critical to good control and should be of the best quality. Buy something that feels good to you and whose servos track the stick movements well!!

Which brings us logically to the servos! I have stopped using non-ball bearing servos except in those instances where they will be installed in a small (under .35) powered plane or a 2 meter glider. Servo resolution is much better and you do not encounter the problem of the top case output drive hole wearing egg-shaped as they do in an unbushed case. If possible, take the next step and get a coreless motor and it will cost you MORE money and more current drain during the flight, but the better resolution is worth it! Here again, it's a question of protecting your investment by buying quality.

Back to the original question -- AM, FM, or PCM? I still fly a lot of planes on AM and have not had any trouble. I use dual conversion receivers only. There is no reason to give up on this type of equipment if you already own some. If your favorite TX is an AM only TX, just make sure you use good RXs and go on flying AM. Suppose you're buying a whole new outfit? Leaving the compatibility question out of it, I

CONTINUED ON PAGE 2

Springfield RC Club Minutes for March 2006. Don Bordwell, Secretary

The February meeting of the Springfield R.C. Club was held on Groundhog Day at the Brentwood Branch Library.

President Doug Bennet opened the meeting at 7:00 with 17 members in attendance. Doug read the monthly treasurer's report which was accepted as read.

Old Business: The club revisited the subject of flying electrics before and after the prescribed site flying times. After much discussion a motion was brought to the floor to allow electrics to fly

after 8:00 PM for a one year trial period. The motion was seconded and passed 13-yes to 4-no. The date of the Swap Meet/ Fun Fly was corrected to May 13th, and Jerry Kutz commented on continuing efforts to come up with a replacement refrigerator for the hanger.

New Business: Mike Howard brought forward that a videographer from KSPR 33 would be shooting some footage of his shop and the club's field for a project. Then Doug asked that members forward suggestions for repair and improvement proj-

ects for Field Day which will be April 22. Russ Rhodes pointed out the presence of neighbors horses loose on the field, and then asked for ideas for a regular meeting place for the monthly meetings as it is difficult to get the same room booked every month at the South Library Station. Doug then invited everyone to attend the Mid Mo. Radio Control Association's Swap Meet in Columbia February 11th.

Doug closed the meeting at just after 7:30.

FROM PAGE 1

would opt for plain FM not PCM since you will save \$40 to \$60 that you could better spend on good servos! All you are buying with PCM is failsafe in case you get interference. I have seen one plane saved by failsafe (because it never left the ground) and watched two others go straight in under failsafe so my choice is no PCM. One thing we need to straighten out here! I recently read one article by a supposed expert who stated that PCM radios used 1024 bits of resolution while FM or PPM used only 512 bits of resolution and that made PCM better! FM or PPM doesn't use any bits at

all! PPM stands for Pulse Positions Modulations and is infinitely variable. Incidentally, AM radios also used PPM as a modulation scheme. The radios which do use 512 bits are older PCM types which I believe are no longer available. PCM stands for Pulse Code Modulation and seems to have been developed to eliminate certain types of interference back before we had dual conversion receivers. Its reason for use has therefore disappeared. What pulse code modulation does is convert the analog signal from the TX stick into a true binary code by means of a microprocessor chip in the TX. This binary code is

then sent to the RX, where by means of another microprocessor chip, it is converted back to an analog signal and forwarded to the servo for which it was intended. It is interesting to note that ALL servos are basically identical, whether they are to be used with AM, FM, or PCM radios. Although you may have to change connectors, you can use any servo with any radio.

So, it's still your money and your choice, but as far as I'm concerned, I'm not wasting my bucks on PCM when I can spend it on better servos, a new engine, or maybe even a new airplane!

2006 Events Calendar

Apr 22	Field Day
Apr 29	Alternate Field Day
May 15	Swap Meet and Fun Fly
Jun 3	Fun Scale Contest
July 29	Float Fly Practice, Lake Springfield
Aug 12-13	Annual Float Fly, Lake Springfield
Sep 9-10	Annual Pattern Contest
Oct 6-8	Annual Heli Fly
Dec 7	Christmas Party

Springfield R/C Flying Club Fun Scale Contest

SPRINGFIELD MO

June 3, 2006

Registration at 9:00 a.m.

Static Judging at 10:00 a.m.

Flight Judging at 11:00 a.m.

- ◆ AMA Sanctioned
- ◆ 2 Classes Military & Civilian
- ◆ Plaques through 3rd place in each.
- ◆ Food and Refreshment on site
- ◆ Due to noise restrictions gas engines are prohibited
- ◆ Landing fee \$5

GPS Coordinates:

N 37d 20.55m W93d 12.196m

Directions to field:

From I-44 & 65 take 65 North approx. 7 miles to Highway KK, turn left. Go 2 miles to Farm Rd. 189, turn right and go 1/4 mile and your there.

For more information visit our web site at:

www.angelfire.com/mo2/blacksheeprc/index2.html

or contact the CD, Doug Bennett

[\(iflyrc@sbcglobal.net\)](mailto:iflyrc@sbcglobal.net) or 417-880-8330 or 417-887-1529

WINGTIPS -WHAT GOOD ARE THEY??

-by Clay Ramskill

There are just about as many types of wingtip treatments as there are plane designs - which is a whole bunch! Why?

There are several lines of reason that can be applied to the tips designers put on their wings. Looks is one; a squared off tip looks a bit rough, like maybe the designer wasn't smart enough to come up with something better! However, that's the cheapest and easiest way to do it, so economics/ease of construction is a factor. Another reason for the wingtips might be efficiency. Just look at the winglets they're putting on some airliners these days; efficiency is what those birds are all about! And there are other areas that the wingtip can affect - like roll rates, stall characteristics, aileron flutter, and so on.

Let's take a look at the wingtip. In flight, a plane is supported by the air flowing over the wing; the airfoil shape is such that we get high pressure on the bottom of the wing, low pressure on the top. The difference between those pressures, spread over the area of the wing, gives us the lift we need. But the air will always want to flow from an area of high pressure to the lower pressure areas - at the wing tip, that's just what happens. (see fig. 1)

That flow of air lessens the differential between the high and low pressure in that area, so we have less lift out at the tip. This lessening of the lift out at the wingtip (tip losses) gives us the possibility of increasing the efficiency of that wing by cutting down on those losses.

Tip losses vary considerably with different wing configurations; the losses increase in some proportion to the following: higher angle of attack, lower aspect ratio, higher wing loading, lower airspeed, higher sweep angles, and of course the design of the wingtips.

The first way to cut tip losses is by increasing the Aspect Ratio of the wing; that is, building the wing longer in proportion to its chord, or width. That's why gliders have such long, narrow wings. All other things being

equal, the longer wing has the same tip losses - BUT those losses will affect a lesser proportion of the total wing. Figure 1 illustrates this point.

And the point here is that ANY thing that lengthens the wing, even if the extra tip area is not lift producing itself, will help make that wing more efficient at producing lift. (see figure 2) NOTE; we can't get too wild with this concept - because anything we add to the wing will also produce drag!

Also note in figure 2 that not only the distance the air has to go from the bottom of the wing to the top has an effect, but also sharp corners will play a part. The sharper the corner the air must make, the less the flow. So a tip plate may be the most efficient of all, in that there is not only considerable

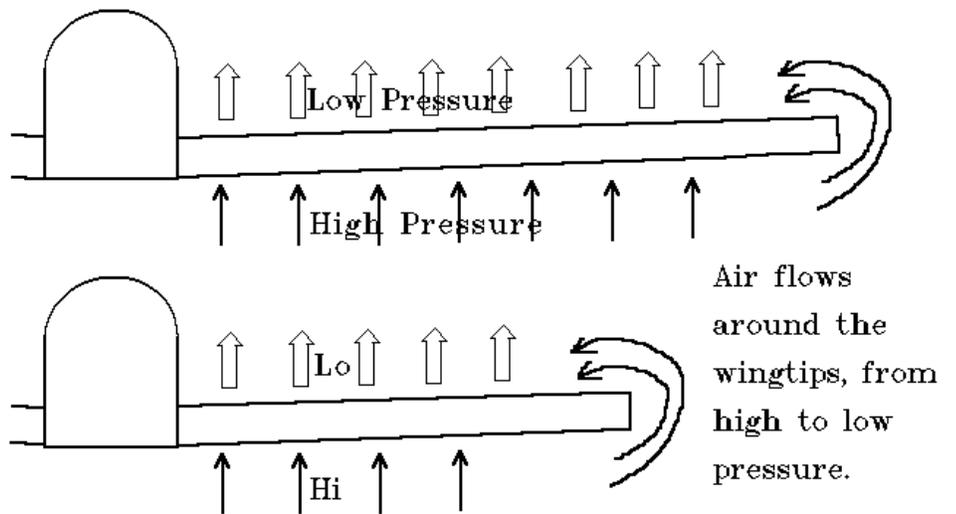
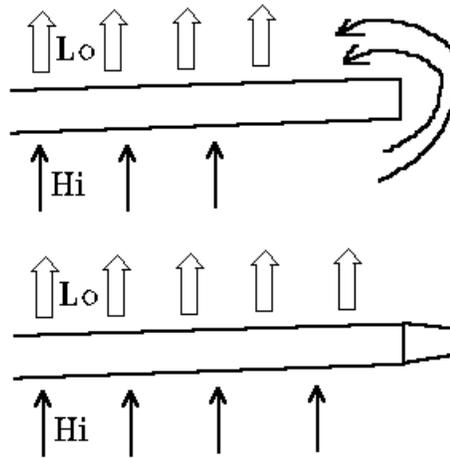


FIGURE 1. The shorter the wing, the larger the proportion that is affected by tip losses.

distance "around the tip", but also two sharp corners!

The wingtips will also affect the planes roll rate, especially if there is a sharp corner out at the end. In general, a rounded tip will allow higher roll rates than will one with a sharp end.

Wing tips are an area where you can easily do (and undo) modifications to your plane, to alter some of its performance characteristics. You may not see much, if any, change to an already efficient wing, like a full span Cub wing. But on a plane with shorter, higher loaded wings, differences from the tips may be quite noticeable.



Although an added wingtip may not produce any lift itself, it will increase the area of wing not affected by tip losses, increasing efficiency.

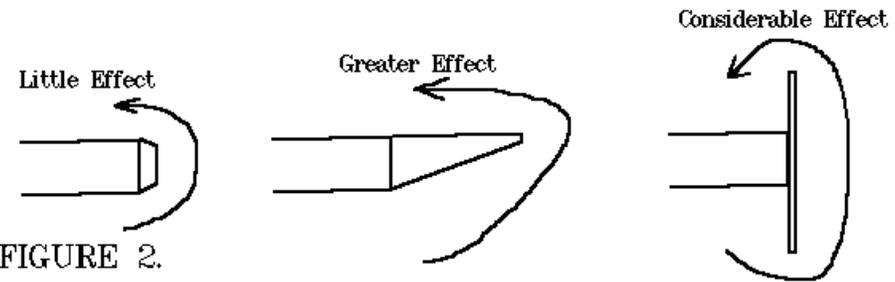


FIGURE 2.

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