HOME OF WARBIRDS OVER DELAWARE
DELAWARE R/C CLUB
LUMS POND STATE PARK - KIRKWOOD, DE

Glitch Busters

April 2013

NEXT MEETING
May 6
7:30 PM
Newark Senior Center
with More Raffles!

AMA #197 / IMAA #687

FROM YOUR PREZ

First, let me clear the air. Recently, I was told that there are club members who feel that it is inappropriate it for the club to provide money for me to help afford the work I have been doing at the Joe Nall. Last year, the Board agreed to financial support and the issue came up again at the March membership meeting. A motion was made to provide the same level of funding but it remained a discussion without resolution. Following the meeting, I sent an email to all the Board members asking them to vote on the issue for I felt it was a conflict of interests for me to vote on this matter. The issue was discussed in a group last week when I was told about some members concerns and disapprovals.

To make the decision easy, I told the Board I would not accept any club support for this years event nor in the future. Just so everyone is clear, I had asked Pat Hartness if he would consider adding control line to the all RC event. He agreed provided I would run it. We did this so that youngsters and other attendees who have never seen it could experience control line flying. Pat Hartness has been trying to find ways to get youngters into aero modeling and control line has been resurging. I agreed and that effort in terms of personal expenses was slightly over $1,600. I agreed, we trained 241 new folks, and got great coverage from the magazines. Three days after last year's event, Pat called me and asked me to do it again and to concentrate on younger modelers in particular. Despite the amount of work, it was worth all our efforts and I agreed immediately.

That effort takes about three months of my year. To oversee it, I spend nine full days in South Carolina to make sure we do our best and attract new modelers. The AMA helped me financially last year, providing about 1/3 of my expenses. That was terrific. This year, I have arranged with Pete Malchione that I would bring the "Warbirds" banner and hang it for all to see. I am again building planes for others to fly as are two others this year, including the great Bob Hunt.

So, can I promise that the work at the Joe Nall will directly benefit club activities? No, I cannot and will not. I am just trying to do my share to have aero modeling alive and well for generations to follow. Even though the club donation was coming from the excess money we have collected from the monthly raffles, it seems much cleaner not to accept a club donation.

Finally, there are those out there in our society that simply do not believe that others may be doing something without any hidden agenda for the real benefit of others. I find that very sad. More people need to be more appreciative of those who came before us and give back every once in a while. I did not volunteer to help at the Joe Nall with hopes of being partially financed. I did find a real silver lining regarding this matter.

While not everyone agreed with my decision, three club members have personally donated their own money to help with some of the expenses. I am still overwhelmed by their generosity and kindness. Thank you guys. End of sermon. The issue is dead and buried… moving on...

We had another packed house for the March Membership Meeting; my count was 42. We had been averaging in the mid 20's. I have always believed you need certain ingredients to get people to show up for anything that is voluntary. That list includes a worthwhile program, something that is fun, and good camaraderie. We are getting there gang and the Board appreciates all of you for attending each month. For those not yet onboard… "Try it, you'll like it."

If my memory serves me correctly, we had four airplanes for show and tell as well as a short review of a new neat meter. I am getting convinced that modelers bringing their latest creations (or purchases) may be the most valuable learning portion of our meetings, especially if the plane has been flown. With that in mind, it would be great if the folks who have brought new planes to the meetings could bring them back after flying to tell the group their experiences. It is very likely more than one person has that exact same airplane.

Tentative Membership Meeting at the New Garden Airport. In a previous newsletter, I shared with you this possibility. I was at the airport yesterday and we talked a little more. If the airport management can pull it off, we will have a great time. We are looking into whether the active runways can be closed in the last afternoon of the meeting day so that club members can bring their planes and fly at the airport! When it gets dark, we would close the flight line and have the meeting inside the main hangar where food and beverage would be provided. Matt is going to talk to Jon Martin (Airport Manager) about this as Jon is a great guy and loves aero modeling. I hope to have great news for you in the next month or two.

April Club Membership meeting is this Tuesday, April 5th at the Newark Senior Center. As usual it will begin at 7:30PM.

The **raffle items** for this month will be a choice of either the very popular and great flying "Calypso" motor glider, needing only a TX and RX. or a supply of high quality servos and related gear for your next project. Again, both items have a street price of $160.00 each. Not bad for a two dollar ticket.

SECRETARY'S REPORT

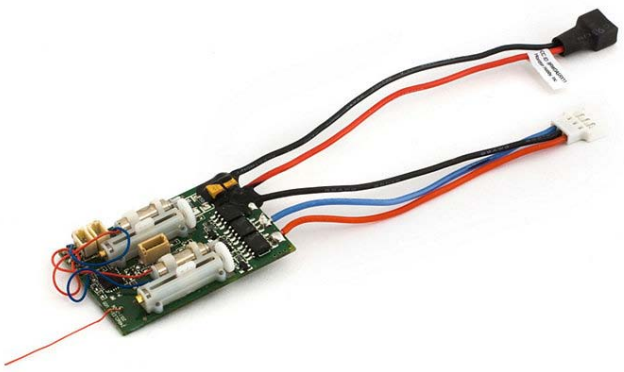
We had 3 guests: Dan Lamoureux and his wife, and Bob from Havre de Grace, MD.

Show & Tell: Dick Stewart with his Beaver on floats, Jim Schlaper with his Hellcat, Fred with his F-15, Stan Michalsky with 3 different types of Heli's, Mark Weiss with his Mega Meter, and Scott McClurg with his Wildcat.

FIXED WING FLIGHT STABILIZATION - by Roger McClurg

It used to be that flight stabilization was the domain of heli pilots, especially those who have flybarless machines. The stabilization tamed those machines and help make their extraordinary maneuvers possible. New hardware now tames multi-copters (tricopters, quadcopters, all the way up to octacopters) to the point that they can maintain a fixed position above the ground with no pilot input. Now stabilization hardware is available to fixed wing pilots from a number of vendors. The capabilities and quality vary considerably as do the prices.

Simple 3-axis gyro systems come bundled with the receiver on a number of E-flite micro airplanes and are now available separately. E-flite calls these AS3x receivers. Stand alone 3-axis gyro systems that connect to your receiver can be purchased from a number of vendors for under $20.



DSM2 6 Ch Ultra Micro AS3X Receiver by E-flite

OrangeRX RX3S 3-Axis Flight Stabilizer V2

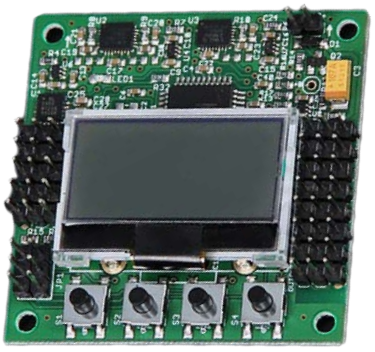
Basic 3-axis gyro systems help hold the attitude set by the pilot, and help to counter upsets due to wind, poor aerodynamics, or high motor torque. Even when flying in strong gusty wind conditions a 3-axis gyro can make a plane feel like it is “flying on rails”. A gyro system does not fight the pilot’s input, nor does it fly the plane. It simply tries to help the plane do what the pilot commands, and that can be straight and level flight, or aerobatic maneuvers. Current gyro systems support: v-tails, elevons, and multiple aileron servos. Many gyro systems allow changing the gyro gain in flight, or even shutting the gyro off all together.

Anyone from a beginning student to a 3D pilot can benefit from an IMU (inertial measurement) based stabilization system. IMU systems have 3-axis accelerometers and 3-axis gyros. They range in price from $30 to $150. 3-axis IMU systems can do the same attitude corrections that 3-axis gyros do, but they can also do much, much more.

An IMU system can level a plane from any attitude just by centering the sticks. The airplane will hold straight and level till you command otherwise. This feature can help take the fear out of a beginner pilot's first few flights, it is also invaluable to someone trying to take photos and videos from a model airplane. Some models such as the Eagle Tree Guardian provide a 3D mode. “In 3D Heading Lock submode, simply center your sticks to have the Guardian lock onto your present attitude (pitch, roll, and heading), which can make it easier to perform stunts like prop hanging, inverted flight, knife edges, low speed harriers, etc! “

The modes used by the IMU can be changed from the transmitter, making it possible to turn stabilization (gyros) and auto leveling (accelerometers) on and off while in flight. Some systems allow the gain to be adjusted from the transmitter as well.

Eagle Tree Guardian



Hobby King KK2

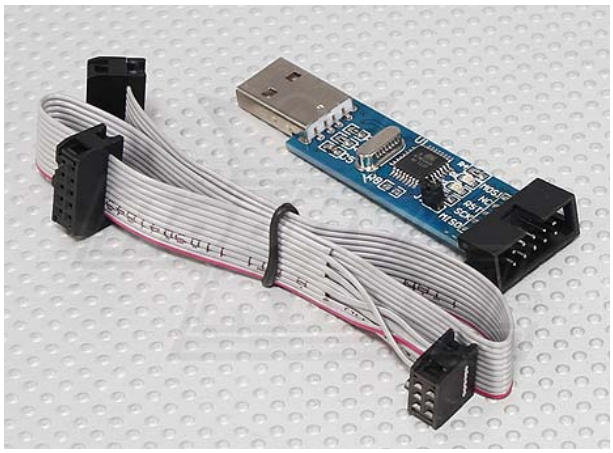
The Eagle Tree Guardian and the Hobby King KK2 are both full IMU flight stabilization systems, but they represent two extremes of the genre. The Guardian requires very little setup other than the gyro gains for roll, pitch, and yaw. It is powered from the

receiver, and requires no other inputs. The Guardian can be connected to a computer via USB to access additional features and to upload and download configurations. The Guardian lists for $75, but can be found on the Internet for about $65 from a number of vendors.

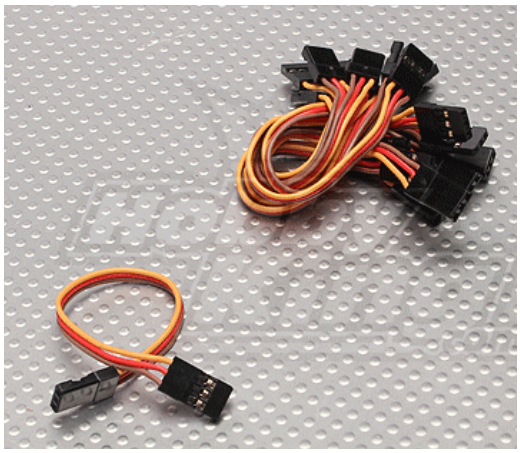
The KK2 comes from Hobby King with 3 airplane modes, and 15 multi-rotor modes. It is a very powerful board, and very cheap ($30). It supports 5 channel inputs and up to 8 outputs. The LCD on the KK2 allows every feature of the board to be adjusted at the field with no additional equipment required. The KK2 was designed for flexibility. It even allows the flight control firmware to be replaced with anything you might want. Enter OpenAero2.

The OpenAero project is an open source project on the Internet that has developed fixed wing flight stabilization software for systems based on Atmega computers. OpenAero2 is the firmware specifically designed for the KK2 board. It supports just about any fixed wing configuration. Currently it is being used on park flyers, 3D planes, flying wings, even full house sailplanes. It has a whole host of features, and a support group that can't be beat. Loading OpenAreo2 requires a USB programming board that connects the KK2 to a USB port on the computer. The board comes with the necessary cable and costs less than $5. The only other parts I needed were some male-male cables to connect the KK2 to my receiver. The cost for everything delivered to my door was just under $50.

Adventurous types can download the very latest beta software from OpenAero and put it on their KK2, but I opted to use a version of the software that was well tested. I also had to download the KK flash tool software in order to upload the OpenAero2 software to the KK2. The KK Flash Tool as well as the OpenAero software are free of charge, although donations are always welcome.



USBasp programming Device for ATMEL processors



Male-Male cables

I chose my trusty SE5a foamy (shown on the cover) as a test platform. It is very easy to fly, but has an annoying aerodynamic flaw that causes it to yaw about 60 degrees left when I do an aileron roll to the left. Rolls to the right don't have any noticeable yaw. Other than that, the SE5a is a blast to fly. It is also made from blue insulation foam, making it cheap and easy to repair should something go wrong.

I found the online manual for the OpenAero2 software to be very easy to follow, and it did not take long before the board was ready to install in the plane. I used all the default entries except that I chose to use dual aileron inputs, and I put stabilization, and autolevel on a 3-position switch. This allowed me to fly with everything off (the KK2 just passes signals from the receiver straight to the servos), with stability on, and with stability and autolevel on.

I chose a day with 8-9 MPH crosswinds for the first flight tests. I the plan was to takeoff and land in the “off” mode. During the first flight stability was engaged and disengaged as I tested it's affect on the planes flying qualities. I tried autolevel on the second flight, and found it to work well. As long as the plane wasn't inverted or near inverted the plane would return to level flight as soon as I neutralized the sticks. I turned autolevel on at the 10 o'clock position while doing a loop. The plane promptly assumed a level, inverted, attitude. I was impressed. By the fourth flight I was ready to go for the whole enchilada. I took off, flew and landed in stability mode. While in the air I did loops, rolls, immelmanns, even a spin. The plane flew perfectly. It’s only problem during the entire flight was that I neglected to use rudder in the first few turns. PJ videoed the flight and it is on YouTube (search YouTube for openaero2 and you will find it). It is only 2 minutes long, and worth your while, if you are interested in the KK2.

I have flown the SE5a dozens of times since the first KK2 tests. Sometimes I fly with it the stability off, but most times on (because it makes my rolls come out so nice). Except for testing I don't use autolevel. It works well, but unless you are a beginner, or flying with a camera on board, it makes flying boring. Who wants to fly straight and level all the time. I have a number of tests I'd like to do with the KK2 on other planes, but I just can't bring myself to take it out of the SE5a yet.

The current version of OpenAreo2 is just about ready to come out of beta. That version supports a whole host of modes including a couple 3D modes. I can't wait to give it a try.

KK2 board installed in the SE5a

UPCOMING EVENTS

Hanover Radio Control Flying Club
11th Annual Swap Meet and Indoor Electric Fun Fly
April 6, 2013

Fairmount Christian Church, 6502 Creighton Road, Mechanicsville, VA
Door prizes and concessions. Swap meet opens at 8:00 AM - $5.
www.hanoverrc.org

Tables $10 (admission included). Availability limited - reserve with payment.
Contact keithcollier@verizon.net
Setup is at 7:00 AM

Indoor Fun Fly - $10
1:00 - 4:00 PM
AMA Card Required
Contact tsracing@dragbike.com

PHOTOS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We'd like to thank G-Force Hobbies for their generous support of our club:

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