The Transmitter

Suburban RC Barnstormers - P.O. Box 524, Bloomingdale, IL 60108

AMA CHAPTER 640 **July 2017**

http://www.suburbanrcbarnstormers.com

Coming in July and August

July 10th, Member Meeting, Itasca Public Library, 7:00pm
July 16th, Fun Fly #2, Pratt's Wayne Woods, 9:00am trim flights, 10:00am first flights

August 6th, Interclub Fun Fly, Springbrook Field, 9:00am trim, 10:00am start, TENTATIVE
August 14th, Member Meeting, Itasca Public Library, 7:00pm
August 20th, Fun Fly #3, Pratt's Wayne Woods, 9:00am trim flights, 10:00am first flights

For Sale

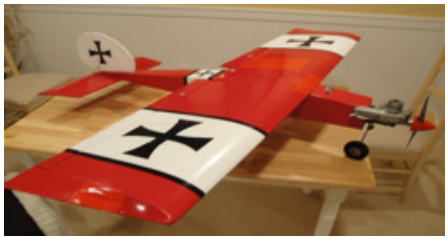
We received the following from a flyer of the Big Foot flying club about items for sale.

To whom it may concern

I am retiring from model airplane flying after 15 years. Not my choice but I am 77 years old and am running into some vision problems so as much as I hate it I have to retire. I am interested in selling all the planes and equipment in my airplane workshop.
All of my planes and support equipment are in excellent shape. I have attached an inventory (including some of my equipment inventory) of what I have. listing original equipment costs. In addition, I have attached photo of four of my planes for your review.
I am interested in selling my inventory in pieces or in total. You are welcome to see all of my gear. I will consider all offers for the total or for pieces.
I reside in Lake Geneva Wisconsin and belong to the Big Foot Flyers AMA Club.

John Grud
Cell phone: 847-373-2948
e-mail: jmg100@charter.net

John has a number of airplanes for sale and a number of other items including radios, recievers, chargers, props, and building materials. Below are pictures of the airplanes for sale.




Bits and Pieces Related to Our RC Model Airplane Hobby

By: Bob Sarley

Welcome to the inaugural issue of the "Final Approach". This is the first in a series of articles that are intended to provide additional information and insight into our RC model airplane hobby. I hope you find the upcoming articles informative and useful (suggestions for topics are welcome, by the way).

The topic for this issue is **Flight Controllers: Should we or shouldn't we?**

For the purists among us, the introduction of computerized assistance to the task of flying an airplane is heresy and a dereliction of the pilot's responsibility to take off, successfully fly and safely land his or her model aircraft. However, there are some definite advantages offered by those devices to the novice or new-to-the-hobby pilot that is trying to make it to that level of competency where the knees stop knocking every time the rollout begins and the aircraft in question can be returned to the landing site intact. It also can be argued that the flight controller can make a small plane act as if it were much larger and less susceptible to wind effects, which gets more planes in the air on more days. For the more seasoned pilot, the controller can lower his or her workload when dealing with a fussy warbird or trying to perfect the geometry of a pattern sequence.

Without getting too technical, let's see if we can get a handle on the current infiltration of computerized flight controllers into the RC model airplane realm.

Evolution: Besides the obvious progress of integrated circuit miniaturization which has enabled the utilization of very powerful computers in incredibly small packages (which helped spawn the current iteration of computerized 2.4 GHz radio equipment and digital servos), equally formidable advances in Micro Electro Mechanical System (MEMS) has placed multi-axis motion sensors and gyroscopic feedback systems (packaged as Inertial Measurement Units or IMUs) at the RC hobbyist's disposal and at a reasonable cost. IMUs are devices that can sense rotation and acceleration in multiple directions. These sensors then output the detected change in direction or position to the onboard processor that in turn directs the corrective action of the control surface servos.

Control Unit Function: When the control unit in the aircraft is powered up (battery plugged in), it goes through an initialization process that, among other things, memorizes its static position. That is why an aircraft equipped with a stabilization device must be stationary and level every time it is powered up. By detecting unintentional deviations in yaw, pitch or roll attitudes compared to its initialized status, the controller can effectively redirect the servos to correct the aircraft's attitude.

Advantage 1 - Stabilization: The control unit's sensitivity to changes in attitude (roll, pitch and yaw), along with the ability to instantly detect and evaluate the extent of those changes and the rapid processing of those variables into servo direction all combine to provide corrective actions much more rapidly than us human pilots can detect or to which we can react.

> Example: Your model is in level flight 250 feet away and a gust of wind 90 degrees to your flight path is going to attempt to lift one wing, induce an unintentional roll and disrupt your intended path. Before you can even see the wing lifting at that distance, the IMU has detected the motion and sent a corrective command to the aileron servo – keeping the wings level.

Advantage 2 - Heading Holding: Many of the currently marketed controllers can be set to a "Heading Hold" mode. In this mode the controller remembers the last heading of the aircraft when the control stick (elevator, aileron or rudder) was brought to the neutral position. As long as the aircraft is flying fast enough to provide aerodynamic response to control surface deflection, the control unit will maintain the aircraft's heading (in any attitude). Any control input from you and your transmitter will override any attempted assistance by the onboard controller, insuring that the pilot is always in control when he or she wants to be.

Example: You are initiating a Reverse Half Cuban Eight maneuver. After attaining the 45 degree up-line with wings level you roll to inverted and let go of (center) the sticks. The control unit will maintain the inverted 45 degree up-line for you with no other input required (provided the CG is correct and the airspeed is sufficient to allow for aerodynamic control). When you are ready to start the inverted loop back to level and upright flight, you pull up elevator. Any input from you via the transmitter elevator stick will override the onboard control unit and move the elevator per your input. If you do not move the aileron stick, the controller will continue to maintain the wings in the same attitude in which you started the maneuver (hopefully nice and level).

Advantage 3 – SAFE mode: All of the controller's abilities described above can be applied to an aircraft in such a way that a pilot in trouble (lost orientation, overcorrection, accelerated stall, etc.) can flick a switch and have his/her aircraft right itself from any attitude and regain level flight. Again, this is assuming there is sufficient airspeed to allow correction via the control surfaces.

E-Flite and other ARF and Ready-To-Fly manufacturers have incorporated this capability in everything from high-wing trainers to mid-sized scale warbirds. The feature is assigned to a switch on the transmitter and can be enabled or disabled at the pilot's discretion.

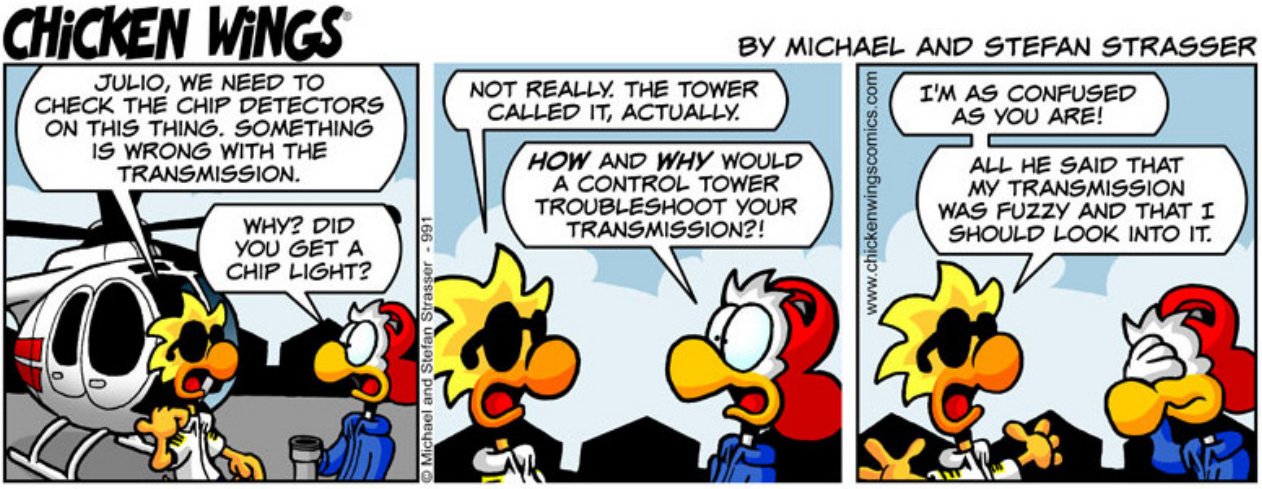
SAFE mode Functionality: Flying a model in SAFE mode invokes the following functionality. It will keep the aircraft stable in windy conditions as described above, but it will also limit the flight envelope to a bank limit of approximately 40 degrees and a climb or decent angle of approximately 40 degrees as well. You can climb, dive, bank and turn at will – but within those limits. At any time during the flight, if the sticks are returned to neutral the controller will bring the model to a level flight attitude (again, this is assuming there is sufficient airspeed to allow correction via the control surfaces). Throttle management and control of air speed is still completely up to the pilot. Switching the SAFE Mode off gives full control and unrestricted flight envelope back to the pilot. At any time during the flight, if the pilot feels the need, he/she can switch back to SAFE mode and the aircraft will right itself.

Conclusion: There is none . . .

I believe a novice pilot would find the capabilities of a controller/stabilizer very valuable while learning how an RC model airplane reacts to transmitter commands.

I also think a moderately proficient pilot would enjoy the subtle assistance provided when encountering stiff winds or grappling with the high-strung characteristics of a scale warbird (with scale anomalies).

The installation and use of a flight controller or stabilization device is totally at the discretion of the pilot. Even in those aircraft that come with the device pre-installed or as an integral part of the receiver, the functionality can be enabled or disabled at will (very democratic). There could be times, however, when having it at your disposal could possibly save an otherwise boomed model from oblivion.



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We reserve the right to edit all information forwarded to us. Permission is hereby given to reprint any article that we publish as long as proper credit is given.

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Articles must be received by the 4th Saturday of the month to be included in the following month's newsletter.

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