the Ampeer

November The EFO Officers 2003

President:
Ken Myers
1911 Bradshaw Ct.
Walled Lake, MI 48390
Phone: 248.669.8124

Vice-President:
Richard Utkan
240 Cabinet
Milford, MI 48381
Phone: 248.685.1705

Secretary/Treasurer:
Debbie McNeely
4733 Crows Next Ct.
Brighton, MI 48116
Phone: 810.220.2297

Board of Director:
Jim McNeely
4733 Crows Nest Ct.
Brighton, MI 48116
Phone: 810.220.2297

Board of Director:
Jeff Hauser
18200 Rosetta
Eastpointe, MI 48021
Phone: 810.772.2499

Ampeer Editor:
Ken Myers
1911 Bradshaw Ct.
Walled Lake, MI 48390
Phone: 248.669.8124

Ampeer subscriptions are $10 a year US & Canada and $17 a year worldwide

The Next Meeting:
Date: Saturday, November 01 **Time:** 10:00 a.m.
Place: Midwest 5 Mi. Rd. Flying Field

What's In This Issue:

Li-Po Fires

From Rick Sawicki Rrrjjjsss@aol.com

I received the following from Rick Sawicki, EFO club member. I thought it interesting, as this has been a major topic on the Eflight list. I do not endorse this type of testing in any way, but it is certainly interesting. At the September EFO meeting, Tom Bacsanyi showed me a melted Li-Po pack of his. Hopefully the new Astro Flight model 109 will help with these problems. KM

I have actually caused a Lithium Polymer battery to catch fire. This was done on purpose to see what all the excitement was about.

The pack was a 2-cell 500 mAh pack charged as a 3 cell pack at 1.5 Amps. The result was a fire that sounded like a blowtorch for about 3 seconds, flames about 6 feet wide and 3 feet high.

I wish I had a video of it, because it scared me. It was an awesome fire that would have ignited anything flammable within 3 feet of it. I have a black spot on the concrete floor of the shop.

It only took about 20 minutes to accomplish this under controlled conditions.

I personally know of two vehicles and a garage that went up in flames.

I'm one of those who tell as many people as I can to be VERY careful with Lithium batteries.

We spent a lot of time trying to make our charger bullet proof, but there are still some rules that have to be followed to be absolutely safe.

Smooth Landings
George

Servo Tests

From: Pete Waters Ptwaters@cs.com
It comes from Brian Taylor in Aus.

In a recent job I got to test 50 servos from several manufacturers (Hitec, JR, Futaba, GWS, Volz, FMA) for a UAV manufacturer. Perhaps this summary will help. I set up a 100 hour test with the servos cycling ± 45 degrees once per two seconds lifting a 1 kg load on a 10 mm moment arm. In normal flight conditions there would be many small deflections rather than the continuous sweeping I used in this test. The kg.cm torques is fairly representative of flight loads on a small UAV or RC model.

All tests were done at 5.00 volts with each servo having its own 1 amp power supply and a 1000 uF cap to supply a short time peak current a bit over an amp. Note that digital servos can pull considerably more than one amp when stalled but

running in this test they drew less than one amp.
1. There is NO true standard in the hobby RC servo industry except that 1500 uSecs was the centre position on ALL servos tested.
2. 1000 to 2000 uSecs works with EVERY servo tested. 900 to 2100 or 800 to 2200 worked with SOME analog servos but caused almost instantaneous destruction with newer digital servos. Digital servos draw 4 or 5 times more current in their quest to get to the set point faster. If the internal gearboxes or a binding linkage prevents this, they go into very rapid meltdown internally.
3. Just because your new fancy transmitter lets you dial in 120% throws, do NOT assume your servos will comply. Digital ones may die.
4. Rotation angle is not standard, even within one maker's range. 1000 to 2000 uS can be ± 45 degrees, ± 60 degrees or even ± 90 degrees.
5. All nylon gearboxes typically have lowest backlash and remain tight over 100+ hours of cycling. Metal gearboxes wear substantially over 100 hours.
6. Metal shaft/metal gear servos like the Futaba micro servo are very robust but the metal shaft conducts interference into the pot and the servos chatter with nearby RF interference - bad news on a UAV with on-board transmitter until you fit ferrites & bypass caps.
7. Hitec servos, in general, have motors far too powerful for their gearboxes and instantly strip gears if linkages bind. Other servos may do this, but Hitec stood out as poor in this regard. Volz failed in the shortest time under load tests from electronic failures, not gearbox troubles.
8. Ball bearing servos performed no better than servos with the output shaft just rubbing on the plastic case. Observed case wear on the no bearing Futaba and GWS servos was negligible.
9. Driving the servos with 50 Hz refresh rate gave 100% of makers' specs for response time and torque. Driving faster (only went to 60 Hz) did not improve response times. Going down to 25 Hz refresh rate worked for all servos tested but holding torque and response rates suffered.
10. Lowest power with highest speed was to drive the servos at 50 Hz rate until into position then drop the refresh rate back to 10 Hz. Only works for lightly loaded servos however.
11. Price was absolutely unrelated to lifetime. The most expensive (Volz) failed first (all three of a sample of 3 at 5, 22 and 35 hours).
12. Cheaper servos have more backlash when new and tended to have highest backlash at end of test. Backlash was very small in every servo tested and your linkages are guaranteed to have more slop than the servos.
13. Digital servos have a genuine 1000+ steps between 1000 and 2000 uSecs. Analog servos gave 500+ steps from cheapest to most expensive.
14. How long do servos last?? Unless you physically stress them by manually moving the output arms, you can be almost certain to get 75 continuous hours. That is probably plenty for normal RC hobby flying but for UAV use I would suggest replacement at 50 hours maximum. Your mileage will vary depending on loads, vibration (the wiper on the feedback pot can gouge a pit into the track in high vibration), power supply voltage and current limits, temperature extremes, moisture ingress, etc, etc. Lifetime could be as low as 10 hours if you insist in pulling the full rated torque and loads out of the servo with every movement.

MIDWEST R/C SOCIETY
presents the 16th annual
R/C SWAP MEET

Sunday, November 2nd, 2003
9:00am to 2:00pm

Northville Recreation Center at Hillside School
(1 block south of Eight Mile Road, west off of Center Street)
Northville, Michigan

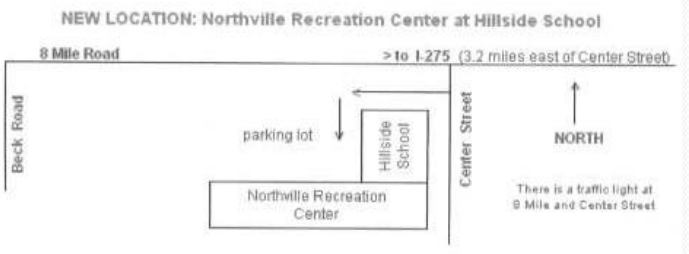
admission
$3.00 per person

table cost
$15.00 per table if paid in advance or $25.00 per table at the door

The table cost covers one admission. If you have more than one person per table, the additional cost is $3.00 for each extra person. Vendor set up time is 8:00 a.m.

For table reservations, call Rudi Reinhard: 248.643.4509 or e-mail: wwtbi@aol.com

This is the biggest and best swap meet in southeastern Michigan!



Let's Be Careful Out There!
Or
When Life and Electrics Bite You at the Same Time
From: Steve Elwell SKE@StevenElwell.com

Steve is an EFO member. This email included some interesting information on some of his planes, but more

importantly a reminder not to take epower for granted! It can be dangerous. This is Steve's edited email. KM

Hi Ken,

I should try an do a small article for you on my Wattage Ultimate, powered with a Mega 16/15/5 and 3x3 ETec 1200's. Takes off in 5 feet and goes straight up, perhaps unlimited. It's a lot of fun to fly.

I also built another Impress, the new Wattage Super Impress. It uses the same power plant as above with no dihedral. It flies like a stick but more 3-D like. With a very light wing loading, I think I can thermal it!

Today I might finish my B22 powered Pink Flyer, built with no dihedral. That should be a good plane for the dome.

I might start on my Vertical RC CAP soon. I keep waiting for me to pile in my Katana, but it is still holding up. I just beefed up the nose/motor mount area. The torque from the B22 was tearing up the nose area after a while. This time I took a new motor mount, that I got from Chris at VRC, and glued it on, after cutting off the forward .25" of fuselage foam. Then I drilled 2 1/8" holes, 4" deep, back into the fuse - one near the top and one near the bottom which ties into landing gear plywood. I then glued 1/8" x 4" long carbon fiber rods into those holes, all in an effort to carry the motor mount forces further back into the fuselage. I also lined the top and bottom side of the hollowed out motor mount area of the fuselage foam with 1/8th inch spruce. Now the motor can move much in that area. I can even put a strap around the B22 now that the spruce is there, but I don't think I will need that.

We really should try to fly together once in a while. Tom Bacsanyi and I try to fly about twice a week. I couldn't fly last weekend at that get-together, as I was down in Columbus at the OSU game with my girlfriend.

Not sure if you know, but I had a bad e-accident recently (in early August). I cut myself badly, but all is healing up well. I have been very mad at myself, as this is the first major medical incident I have ever had to deal with and my first r/c-c/l accident in 30+ years of dealing with these things. If you think it would be good, my story might be a good basis for a good article debunking the myth that electrics are safer than nitro/gas powered planes. Basically I let my guard down, and then a rare set of circumstances and possibly interference allowed the ESC to energize. It was my fault in the end. I tend to be very careful with my handling of these planes, but I messed up here. Perhaps an article might get a lot of people to realize how bad electrics can be if you let them bite you - and they eventually WILL bite if you LET them. (*Guess this is the article. KM*) 300 watts put to an 8x4 APC can really do some damage! The scary thing is that it could have been much worse. I'll spare you the details for now, but I have a nasty 1.5" long scar 3" down from my elbow on my inner right forearm. The medical bills are now at about $1800. It was an expensive lesson.

All that came after just having gotten a lot of dental work done. To top that, I just got laid off. I have been working remotely as a contractor. The lay off may be temporary, but I can't make any assumptions on that. Now I am looking for any computer work. Let me know if you hear of any. I tend to work for myself, at home. I mainly do advanced Windows, Database and Internet work - SQL Server, IIS, Win32 API, Multi-threading, etc. In this economy my rates are more reasonable! :)

Take care and keep in touch.

Steve

Please note that I left the part in about his job so that if any Ampeer readers could use his services, you can contact him. We've got to keep our fliers employed, right? ☺KM

Zero Seven Finale

From: Robert Comerford flyelectric@dodo.com.au

Ken,

First let me make a correction to some info I gave to you. The speed control on Bob Meyer's Firefly is a Jeti - not homemade as I stated.

The Zero-Seven saga has reached its conclusion with the model now more suited to my higher performance needs. I originally envisaged it needing a 120 watt input power system using a speed 480 type motor and 7 1000 mAh cells. Needing some replacement cells for my tired 500AR's I recently purchased 10 1050 Kan NiMH cells. Making use of what I had available, I used a Speed 400 7.2V motor, 2.3:1 MFA gearbox, 9x7 GWS prop and a 26-amp Shultze ESC. The static current is about 12 amps and total weight is now 690g. Test flights have all been longer than 10.5 minutes (3.5 minutes with the worst of the old 500 packs). The day was fairly windy, so much full throttle was used to keep the plane from disappearing downwind as I looped and rolled it over the sky. The plane now fulfills my wishes in having a satisfactory flight time without resorting to the most expensive technology. It flies fast enough to mix in with the I.C. models, and its profile can be seen by those pilots to help avoid collisions. I had also put the undercarriage back on for the purpose of the tests. I would also recommend this power system if it was being flown more sedately in the original rudder/elevator configuration. It can just be throttled back for a long flight and still have plenty in reserve to get out of trouble. Just the way I like it.

Regards,

Bob

Gearstick

From: David Hipperson ritzi@corplink.com.au

Dear Ken,

I thought you might like to see a picture of my latest, not that it's anything remarkable. I designed and built it with beginners in mind for my club. Called, with enormous originality, "Gearstick" it is 50 inches in span and an all up weight of 28 oz. It has a fully sheeted wing with a flat bottom section. There are just three channels on Rudder, Elevator, and Motor. Power is a TSH 400 mated to a 3:1 Hi-tech "open-frame" gearbox and a 9x6 prop all fed by 8 CP-1300 cells through a Skyline propo 20-amp ESC.

It flew without alteration to the trims from the first hand-launch, but it will ROG and flies comfortably for 10 minutes plus, dependant on throttle use. The plans are drawn and we hope that some of those closet electric fliers will be tempted. It's a step up from most park fliers but really easy and cheap to build.

Regards as always,
David Hipperson

A Good 4-Channel Sport Model Basic Recommendation

Ken....

If you are looking for a topic in one of your upcoming articles for the *Ampeer*, I would enjoy your thoughts on what might make a good 4-channel electric sport model. A few criteria for you to consider:

Span: 45-55"
Capable of basic pattern stuff (no 3D, however), so probably semi-symmetrical
Ok in light to moderate winds
I'm guessing 3-5 pounds RTF
Preferably high wing
Brushless and Lipo powered
Thrust ratio (ideally) at least 1:1
20-minute flight times
Good speed range

I have thought about several candidates. The SIG LT-25 seems to be a popular choice (though it has a 60" span and flat-bottomed airfoil) and SR's AcroPro as well. Are there others that come to mind?

Thanks, and PLEASE keep up the good work!
Jim email: houfekj@oclc.org

Ken's Comments

The major consideration in Jim's request is the use of Li-Po cells. I did some calculations before starting these comments that leads me to suggest the Thunder Power TP2100 2.1 Ah Li-Po cell. According to the MotoCalc data (http://www.motocalc.com) this cell has a resistance of 0.022 ohms. Static amp draw for the cell can be 2.1 Ah * 5 = 10.5 amps. At 10.5 amps this cell can provide about 41.4 watts to the motor. A 3-cell series pack might, without stressing it, provide about 124.2 watts to the motor.

My data for a sport/sport scale model:
Weight Factor [WF]: 2.7
Performance Factor [PF]: 3 to 4
Prop Diameter Factor [PDF]: 1.25
Prop Pitch Factor [PPF]: 0.65

Using my data:
Wing Area [WA] =
((((Watts in/PF/WF)*16)/WF)*144)^(3/5) (*Note: 1*) This is a new formula that I've not used before.
((((124.2[Watts in]/3.5[mean PF]/2.7[WF])*16)/2.7[WF])*144)^3/5) = 269 sq.in.
Wing Loading [WL] = WA^(1/3) * WF
269 sq.in.[WA]^(1/3) * 2.7[WF] = 17.43 oz./sq.ft.[WL]
Calculated Target Weight in oz. [CTW oz] = WA/144*WL
269 sq.in.[WA]/144*17.43 oz./sq.ft.[WL] = 32.56 oz.[CTW oz] (*Note: 2*) This weight is more important for determining the completed airframe weight than the actual finished ready to fly weight.
Calculated Target Weight in lb. [CTW lb] = CTW oz/16
32.56[CTW oz]/16 = 2.035 lb.[CTW lb]
Completed Airframe Weight [CAW]:
Good CAW = CTW oz/3 = 32.56/3 = 10.85 oz.
Okay CAW = CTW oz/2.5 = 13 oz.
Questionable CAW = CTW oz/2 = 16.28 oz. (*Note: 3*) The questionable CAW is really only applicable to large planes
Watts to Fly Level [W2FL] = WL * CTW lb
17.43 oz./sq.ft.[WL]*2.035 lb.[CTW lb] = 35.47 Watts (*Note: 4*) This is not needed in this data set, but is presented to show how the PF is used, because W2FL*PF = Watts in

Therefore, for Jim's 45" to 55" span model, the mean wing span being 50", his;
Wing Chord = 269 sq.in. / 50" [span] = 5.38." [chord]
Aspect Ratio = 50" [span] / 5.38" [chord] = 9.29:1

This is NOT a good aspect ratio for a sport plane. It is more like a glider. It needs a wider average chord for a 50" span to lower the aspect ratio.

If a second 3-cell Li-Po pack is paralleled to the first, it becomes a 3S2P pack with twice as many watts available to the motor, or about 248.4. Putting the pack in parallel keeps the volts the same but increases the available static current to 10.5*2 = 21 amps.

Wing Area [WA] =
((((Watts in/PF/WF)*16)/WF)*144)^(3/5)
((((248.4[Watts in]/3.5[mean PF]/2.7[WF])*16)/2.7[WF])*144)^3/5) = 407.85 sq.in.
Wing Loading [WL] = WA^(1/3) * WF
408 sq.in.[WA]^(1/3) * 2.7[WF] = 20 oz./sq.ft.[WL]
Calculated Target Weight in oz. [CTW oz] = WA/144*WL
408[WA]/144*20[WL] = 56.7 oz.[CTW oz]
Calculated Target Weight in lb. [CTW lb] = CTW oz/16
56.7[CTW oz]/16 = 3.54 lb.[CTW lb]
Completed Airframe Weight [CAW]:
Good CAW = CTW oz/3 = 56.7/3 = 18.9 oz.
Okay CAW = CTW oz/2.5 = 56.7/2.5 = 13 oz.
Questionable CAW = CTW oz/2 = 56.7/2 = 28.35

Jim's 45" to 55" span model, with the mean wing span of 50" now looks like this:
Wing Chord = 408 sq.in. / 50" [span] = 8.16." [chord]
Aspect Ratio = 50" [span] / 8.16" [chord] = 6.13:1

6.13:1 is an acceptable aspect ratio for a sport plane.

I have found that the wing area range can be plus or minus 5%. Therefore the wing area range is 390 sq.in. to 420 sq.in.

It should be noted that the CAW takes into account an appropriate structure for the task. In this case it is typical "sport/sport scale" plane.

A low-wing choice might be the Modelair-Tech T3D with 375 sq.in. of wing area, which falls just shy of the 390 sq.in. mentioned above. The Great Planes Ryan for electric power, also a low-wing, would be a good candidate for this power system. It has 401 sq.in. of wing area. (http://www.towerhobbies.com)

Hobby Lobby has the high-wing Bonnie 20 (http://www.hobby-lobby.com/bonnie.htm) with 422 sq.in. of wing area. They also have the Miss Acro with 396 sq.in. of wing area. (http://www.hobby-lobby.com/missacro.htm) Another high-wing is the 397 sq.in. Super Miss (http://www.hobby-lobby.com/supermiss.htm).

Northeast Sailplane has the low-wing Trick 1000 with 380 sq.in. of wing area. (http://www.nesail.com/telink/trick1000.htm) The Esprit 2 is a shoulder-wing with 428 sq.in. of wing area. (http://www.nesail.com/Obag/espirit2.htm)

If you want to design your own high-wing, I found this page that describes how to "design" your own high-wing plane following well used parameters. It is called "Practical R/C Model Design" and is located at: http://webpages.charter.net/rcfu/HelpsHints/ModDgn.html It is provided by Howard Sullivan at R/C Flight Unlimited.

To figure out which motors are possible, the prop diameter and pitch needs to be figured. At about 56.7 ounces the diameter would be (SQRT((56.7*1.25[PDF])/Pi))*2 = 9.45". Rounded that would be a 9-inch diameter prop. The pitch would be 9*0.65 = 5.85" or 6" pitch. The motor should turn either a 9x6 with about a 21-amp draw. Data at the Northeast Sailplane site for the AXI 2820/10 brushless motors indicates the following. (http://www.nesail.com/AXI/axi282010.htm)
9x6 APC, 10 RC 2000, 22.8 amps, 10150 RPM, 11v, 189.3 watts out, 250.8 watts in, 75.5% efficient, weight 161g/5.7 oz.

With a 19 oz. completed airframe weight, this plane could weigh:
Airframe: 19 oz.
Motor AXI 2820/10: 5.7 oz.
3S2P TP2100 battery: 9.14 oz. (guestimate)
Controller TMM 40e–3ph: 1.6 oz.
Receiver FMAdirect M5: 0.4 oz.
3 servos – Hitec HS-81 0.6 oz. ea.: 1.8 oz.
Component weight total: 37.64 oz.
Estimated RTF weight: 37.64 *1.05 (fudge factor) 39.5 oz.

Don't want to go brushless? Changing the motor to an Astro Flight 035 (6.5 oz.) geared 2.82:1 (1.5 oz.) and a Castle Creations PEGASUS-35P (0.75 oz) only increases the weight by about 1.5 ounces so the RTF weight would be about 41 ounces.

Don't want to go Li-Po? Using a 10-cell Sanyo CP-1700 pack (16.5 oz.) totals about 47 ounces with AXI brushless and about 50 ounces using the geared 2.82:1 AF 035. A 10-cell Sanyo CP-2400 mAh pack (22 oz.) would give a RTF of about 51 ounces for the AXI and 53 oz. for the AF035 geared 2.82:1. All these weights fall well within the range of a good flying sport plane of 400 sq.in. The choice is yours.

SR Batteries X-250 Power System

From: Greg Cardillo GMCardillo@att.net

Hi Ken,

Wanted to let you know I switched my X-250 to the Permax Turbo 450 motor - and the seven 1950 NiMH cells just fit and balanced with the servos in standard location. The performance is much better (as you know from yours) and getting flights of 10+ minutes now. I flew it along with a couple of other models at the Neat Fair last weekend.

Thanks for the information on your setup!

Greg Cardillo
Skymasters R/C

Reviewing the Reviews: Hobbico SuperStar EP
By Jim Tolpin - Quiet Flyer, September 2003, p. 70

I had looked at this plane at Joe's Hobby Shop in Farmington much earlier this year. I'd even started working with the data to see if it would make a good trainer before Jim's review came out. Jim's review of the real world plane, had matched what my mathematical data had suggested, it's an okay trainer that requires an instructor.

Again, the numbers are missing from the review that might have provided useful information to the possible purchaser of this kit.

Unfortunately, Jim's valuable information about who should buy this kit and some of the problems will not reach the audience who needs it before they purchase it.

Jim did a very good job at pointing out the shortcomings, especially when the article is read closely.

Jim's comments on flyability:

"The SuperStar EP is most definitely not a trainer designed to introduce someone to electric park flying."

"The brisk flying speed of the SuperStar EP demands that we give the airplane our full attention to keep it within the confines of the field."

"It climbed out nicely – though decidedly more stately than aggressively – to altitude."

"This model needs smooth pavement, a bit of a headwind, and a freshly charged battery to consistently take off from the ground."

"The wing loading of the SuperStar EP is more than twice that of most typical park flyers, so this model must, therefore, fly relatively fast to keep itself airborne."

"With just a bit of urging with a shallow dive, the SuperStar EP performs beautiful loops."

I'm not sure where Jim got the impression that the SuperStar EP was supposed to be a park flyer. All of the information on the Tower Hobbies and Hobbico sites, including the manual in .PDF format, call it an R/C trainer. But, as you can see from the above quotes, it is typically lethargic, as most out-the-door ARFs are.

Jim's comments on assembly:

"…why they made one change – going from two Velcro® straps to one to hold the battery. The result was a loose-fitting battery,…"

"In order to reduce the amount of throw mechanically (because the kit comes with a non-computer radio), we had to use the inner hole on the servo and the outer arm hole on the tail feathers' control horn to reduce the amount of throw to the proper specifications. Unfortunately, the pre-installed leads didn't aim at these places… Forcing the rods created tight bends and added power-robbing friction."

"Not too surprisingly, we found the model to be nose heavy. Because we weren't easily able to shift the motor battery backward – a typical solution with many electric models – we ended up adding 0.8 oz of lead to the tail."

"If you plan to do touch-and-goes with this airplane, be sure to beef up the landing gear – nearly every one of our landings resulted in bent-back struts!"

If this an out-the-door to the consumer with no experience plane, why are there so many problems that the beginner wouldn't begin to know how to fix?

The plane has an advertised weight of 2.7 lb. That's 43.2 oz. Jim's plane came in at 47.6 oz. with 0.8 oz. of tail weight. How can the same plane, with the same parts, weigh so differently?

The battery is supposed to be some type of 2.1 Ah NiCad pack. Jim gives a weight of 13 oz. for the pack. There is something strange about that. With connectors, I would expect the weight to be over 14 oz.

Speaking of the battery, it can be clearly seen in the photo on p. 72 that the battery and speed control are fitted with power-robbing Tamiya type connectors.

An R/C trainer – <u>not park flyer</u> – of this size should weigh (402 sq.in. / 144) * (402 sq.in. ^ 1/3 * 2.3 [WF]) or 47.39 [CTW] oz. That's about what Jim's weighs, so why is it so doggy?

Required input power for a trainer type is PF*((WA^1/3*WF*(WA/144))/16)*WA^3*WF. 3.5[PF]*((402[WA]^(1/3)*2.3[WF]*(402[WA]/144))/16)* 402[WA]^(1/3)*2.3[WF] = 176 Watts in. A seven-cell 2.1 Ah pack should be able to deliver that.

The mathematical suggested airframe weight is 47.39 oz. / 3 = 15.8 oz. To check the airframe weight that was not given in Jim's article, it can be back figured. Jim's weight is 47.6 oz. – 0.8 oz. tail weight = 46.8 oz. 46.8 * 0.95 [5% fudge factor for unknown "stuff"] = 44.46 oz. – 13 oz. battery = 31.46 oz. – 3.62 oz. for receiver & servos = 27.84 oz. – 50g [1.42 oz.] = 26.42 oz. – 7.5 oz. motor = 18.92 oz. for the completed airframe. An **okay** weight for a completed airframe is 47.39[CTW]/2.5 = 18.96. Even though the numbers look good with the airframe and onboard R/C system weighing about 50% of the total, from Jim's comments, it just doesn't seem right.

Figuring the prop size, at 47.6 oz. the diameter would be SQRT((47.6 * 1.35 [PDF for a trainer type])/Pi) * 2 = 9.05" or 9". The PPF for a trainer type plane is 0.65, so 9*0.65 = 5.85" or 6". A 9x6 prop is right. The problem seems to be the motor selection with a 7-cell pack used on a Mabuchi type motor turning a 9x6 direct drive. This has to be a very inefficient motor, along with a poor choice in speed control [ESC] and connector. Changing all three parts of the motor system would definitely enhance the performance.

Again, this review provided me with more questions than answers. I turned to the Web to see if I could answer some of my questions.

I found that Don Sims did a review of this plane for the Ezone magazine. The article can be found by going to

http://www.ezonemag.com and using the search box in the left column. Don noted that his plane weighed 46 oz. He also said that the motor is the Electrifly T-601 included with the kit. I could not find any data on this motor. Tower Hobbies lists the T-600 and S-600, formerly the Thurstmaster and Goldfire, but no T-601, which only shows up in their ARF kits.

Don actually had a beginner build and fly the plane. This is the comment from the beginner, "The Superstar EP seems very powerful, but is a bit touchy on the turns."

With comments by both reviewers about "touchy turns", it makes me think that the wing loading is a tad too heavy for a trainer and that it could possibly use a bit more dihedral.

Next, I went to a SuperStar EP thread on the RC Groups list. It is thread: http://www.rcgroups.com/forums/showthread.php?s=&threadid=112961&highlight=Superstar

Here LVRCFlyer discusses his modifications to this plane with photos. He has replaced the motor with a geared Endoplasma, large diameter prop and Li-Po cells. One sentence of particular note was, "The stock motor/prop on the same battery pulled 25 amps and about 150 watts." A seven cell 2.1 Ah pack should be able to deliver more than 150 watts at 25 amps! The low input watts explains the lethargy in getting off grass and having to dive to initiate a loop. It's about 25 watts shy of what is needed for a trainer/easy sport type plane.

All of the reviewers seemed to like the plane, but their bottom line was that it is not exactly on target for its intended market.

Significantly, LVRCFlyer said, "By the way - for $99 ($189 with 3 channel radio installed) this airplane is a TREMENDOUS sport flyer/beginner value!"

I think the important part of that sentence is "sport flyer". See "A Good 4-Channel Sport Model Basic Recommendation" earlier in this issue. With the almost 19 oz. finished airframe weight, this would make a good sport plane, with the addition of ailerons, unfortunately it seems to miss the target as an R/C trainer.

As always, read reviews carefully, do your homework and spend your valuable hobby dollars wisely.

My data for a trainer/easy sport type model used in this article:

Weight Factor [WF]: 2.3
Performance Factor [PF]: 3.5
Prop Diameter Factor [PDF]: 1.35
Prop Pitch Factor [PPF]: 0.65

The October EFO Meeting

Saturday, October 4 started off sunny, but the temperatures were in the low 40's! The winds were easily 12 to 15 mph. When Ken arrived at the field, he really didn't think anyone would show up for the monthly EFO gathering. Boy was he wrong!

Shortly after 10 o'clock about eight or nine cars pulled in and flying began. It was amazing. Everyone was standing around in winter coats and many folks had gloves on, but everyone seemed to be enjoying the day at the field.

The meeting was held at the Midwest R/C Society field, but only one "glow guy" from the Midwest club showed up to fly.

Speaking of glow, EFO VP, Richard Utkan, brought along a large glow aerobatic plane. After the "usual" getting it going routine, it flew very well. He even let Ken fly it for a while. This is mentioned to show that the EFO is not at all "snobby" about the type of planes we enjoy. It is never a them versus us feeling in the EFO. We enjoy electrically powered planes, but we are first and foremost model aviation enthusiasts.

Bring a coat, gloves, AMA card and container of hot coffee and join us for the next EFO meeting on Saturday, November 1, 10:00 a.m. at the Midwest R/C Society flying field on 5 Mi. Rd.

An Open Letter to:
SIG Manufacturing Co., Inc.
401-7 South Front Street
Montezuma, IA 50171-0520
September 26, 2003

Dear SIG Manufacturing Co., Inc.:

On page 115 of the November 2003 issue of Model Aviation, I see that you are now marketing your fine Rascal ARF for use with your Norvell glow engines. Using the name Nitro Rascal, the ad describes the plane as a "Nitro Powered ARF Park Flyer."

In general, I do not endorse park flying, either as a practice or a term. Specifically, I do not believe this to be a useful term, especially when applied to a glow-powered R/C model. The term seems to imply that the owner of this glow-powered aircraft could and should fly it in a local park. While flying small glow-powered R/C planes in local parks does have a history, times have certainly changed!

One of the major obstacles facing our hobby/sport today is the loss of flying sites. Having glow-powered aircraft flying in local parks is a sure way to get local parks closed to all model aviation activity. This has already happened here in southeastern Michigan in the city of Livonia.

I strongly urge you to reconsider the use of the term “park flyer” when describing this version of your Rascal. I would suggest that terms such as “relaxing glow flyer” or “small R/C field glow flyer” could be used instead.

Thank you for your attention and consideration,
Ken Myers
Email: kmyersefo@aol.com

President: Electric Flyers Only of southeastern Michigan
Vice-president: Midwest R/C Society
AMA Leader Member 25973
Past NEAC president (National Electric Aircraft Council) – AMA Special Interest Group
Past Electric Nationals CD, Muncie, IN

As of October 11, 2003, I received no response or reply from SIG Mfg.

Upcoming Events:

November 1: EFO Meeting, 10 a.m., Midwest R/C Society Flying Field, 5 Mi. Rd., Northville Twp. MI

November 8 & 9 Fourth Annual Southwest Florida All-Electric Event, Cape Coral , FL, sponsored by the Cape Coral R/Sea Hawks, Club Web site: www.rseahawks.org , 500-foot paved runway and grass. Shelters and unlimited parking. Contact: Don McGillivray: 239.481.0063

The Ampeer/Ken Myers
1911 Bradshaw Ct.
Walled Lake, MI 48390
http://members.aol.com/kmyersefo

The Next Meeting:
Date: Saturday, November 01 **Time:** 10:00 a.m.
Place: Midwest 5 Mi. Rd. Flying Field
All interested folks are welcome to join us – Must have AMA card on you to fly!