

the

Ampeer

October

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 Nest 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

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Place: Midwest 5 Mi. Rd. Flying Field

What's In This Issue:

Fly RC Launches! - Reviewing the Reviews/Vermont Belle 1300 - Firefly
Model Tech Magic 3D - Aileron Zero Seven - Jumping to Conclusions/Readers' Comments
R/C Trainers - Figuring the Power System for a Great Planes Fokker Dr. 1
Flight Data Recorder Update - Jamara 480 Motor - CSD Info - Upcoming Events

Fly RC Launches!



The EFO received the first issue of *Fly RC* at the end of August. It is published bi-monthly by Maplegate Media Group, 650 Danbury Road, Ridgefield, CT, 06877, USA. The Editor-in-Chief is Tom Atwood. I was very pleased to see Jef Raskin appearing as the Science Editor. Noted e-flier, Thayer Syme, is the West Coast Editor. The contributors in the first issue were very notable and included a couple of friends of the EFO, Steve Horney and Tom Hunt.

The first issue is a good mix of e-power and i.c. power. There was information for the beginner through the expert, with quite a bit of emphasis on 3D in this particular

issue, both e-power and i.c.

The magazine is well produced, written and balanced, although I found some of the article layouts and ads "too busy" for my personal taste.

A pullout plan for Thayer Syme's Park Flyer Spitfire was included. This was a very nice touch!

The useful information varied from author to author, but overall, most of the reviews and information were useful.

On a personal note, I found that there were too many of the ads for the type of beginner's R/C plane that I feel are NOT good for the hobby, and wrote about them in the January 2003 *Ampeer*. I must say that I did call in my subscription, as I can see a future for this magazine.

Subscriptions are \$9.95 per year (6 issues) in the US, \$14.95 in Canada, and \$17.95 for the rest of the world. You can call 1.800.898.5499 or go to <http://www.flyrcmag.com> to order.

A visit to the Web site at the end of August showed that a FREE issue could be ordered, as well as subscribing as a charter member for the prices mentioned above.

The EFO wishes Tom Atwood and all of the staff best wishes on this new venture, and we'll be looking forward to more issues of this new magazine.

Reviewing the Reviews

Vermont Belle 1300

By Ken Myers



(Photo from Northeast Sailplane Web site)

Over the past few years, it seems that the modeling magazine reviews, in some of the magazines, have gotten better and better. In this series of articles I'll be taking a look at current product reviews and suggesting possible ways that they could have been more helpful in making decisions about whether to possibly purchase the product or not. In no way should this be taken as a negative criticism of the original review. My comments are only meant to note ways that reviews might have proved more helpful and been more informative.

"Vermont Belle 1300" by Rob Smith, *QuietFlyer*, September 2003, p.74

Rob reviewed the Vermont Belle 1300 SE (special edition). (*The SE "special edition" designation information came from the Northeast Sailplane site. Rob called it "custom-covered, limited edition". KM*) The plane is available through Northeast Sailplane (<http://www.nesail.com>). The review is three pages long with a 4 3/4" x 3 1/8" ad on the third page. Nine color photographs accompany the text. Rob's narrative is well organized and easy to follow.

The "data" box included; Description, Model Type, Pilot Skills, Building Skills, Wingspan, Wing Area, Fuselage Length, Weight, Wing Loading, Airfoil, Power System, Construction and Functions.

Description: Sport Model" – generally accepted as meaning a non-scale, non-AMA competition type aircraft.

Model Type: Electric aerobatic airplane" – Rob's text notes that it is 3-D capable, therefore E3D or E3D-capable would have been a more accurate description.

Pilot Skills: Intermediate to experienced, **Building**

Skills: Intermediate" – This is good, as most people reading the review can relate to these terms.

Wingspan: 51 in., **Wing Area:** 535 sq.in., **Fuselage**

Length: 43 in." – Rob doesn't indicate whether these were

measured by Rob or from manufacturer's data. It is just nice to know that, as they sometimes differ.

Weight: 43 oz. (48 oz. as reviewed)" – This weight information lacks enough data to be of real value. There should be more specific weight information. When several power system variations are used, as was the case here, there should be weights given for each system configuration. The completed airframe weight should be given. The completed airframe weight is the finished model weight without the airborne radio system components, motor and battery. The completed airframe weight is possibly THE most useful information that can be presented. It allows the reader to "play" with various battery and motor combinations, as well as possible onboard radio system components. Also, the completed airframe weight can be used to help predict the required power for various ways that the aircraft might be used or powered. Weights of the airborne radio components (receiver, servos, ESC), motor and battery should be included.

Wing Loading: 11 oz/sq ft (12.9 oz/sq ft as reviewed)" – the wing loading is a good indicator as to the handling characteristics of the aircraft. It should be shown for all variations of the model tested.

Airfoil: Special symmetrical (9%)" – another indicator of the handling characteristics.

Power System: AXI 2820/10 brushless motor; TMM 40e3pH brushless controller, APC-e 12x8, 8-cell, 2600 mAh battery (10-cell, CP-1700 mAh also used); 10-cell, 1950 mAh NiMH recommended" – This would be a good place for weights of the various components. In this section, it does not denote that the 8-cell, 2600 mAh battery is a NiMH cell pack. I knew it "probably was", but many folks wouldn't know it. The text refers to this pack without the NiMH designation. The only place the NiMH designation is used is in a picture caption on p.76. It would be best to have several "sections" of this information when the manufacturer and/or supplier's recommendation is not used, or only partially used. The brand name of the cells is important as well.

Construction: Balsa, plywood and spruce" – good to know information.

Functions: Ailerons, elevator, rudder and throttle" – this would be a good place to include the airborne radio component weights, brands, etc.

Several captions contained information that was not available in the text. I found this less than useful. When I'd finished reading the text, I had some unanswered question, such as "What type of 2600 mAh pack was used?" and "What airborne radio system components were used?" The captions, as well as the photos themselves, helped to answer some of these questions. I would prefer to see this information in the data box and/or the text of the article.

I really liked the fact that Rob noted, in the text and captions, that the landing gear has problems in both the wire used and attachment to the airframe. It was somewhat helpful that he gave the amp draw and watts into the motor for both the 8-cell NiMH pack and 10-cell NiCad packs measured with a Whatmeter. The 8-cell, 2600 NiMH was "34 amps and 315 watts" and the 10-cell, CP-1700 NiCad was "41 amps and 414 watts" with the same motor and prop combination. Unfortunately, RPM figures were not presented.

Rob speculated why his plane came out 5 oz. heavier than the supplier's weight with the statement, "I believe that the higher weight is due to the model being equipped with metal-gear servos, the airframe being covered in opaque covering, and due to the fact I was powering it with the 2600-mAh cells rather than the recommended 10-cell, 1950-mAh NiMH battery pack."

When I find an interesting review like this one, I like to use it to verify the data that I use to predict performance. To do that, I check it against the data I have and against other sources. All of the following was NOT in the article, but was information that I wanted to know.

I determined the pack weights from information provided by the Diversity Model Aircraft Web site at <http://www.flydma.com/batteries/index.html>.

8-cell, Sanyo HR-SC 2600 Ni-MH – 17.9 oz.

10-cell, Sanyo CP-1700SCR – 16.6 oz.

10-cell, Sanyo 4/5 FAUP 1950 – 14.2 oz.

When I went to the Vermont Belle 1300 page on the Northeast Sailplane Web site, <http://www.nesail.com/VermontBelle/vermontbelle13.htm>, I didn't find any recommendation for a 10-Cell 1950 mAh pack but for a 10-cell 1700 mAh NiMH pack. The one they sell is the 4/5 AUP 1700 mAh Sanyo pack. Using Diversity info I figured this pack to weigh about 12.6 oz. That pretty much explained the 5 oz. difference in Rob's plane and the supplier's information.

I wanted to know the completed airframe weight. The nesail page stated, "the airframe is built very light (only 10 ounces!)" There is no way Sal meant the completed airframe! I have no idea what he was talking about. It is probably the framed up airframe with no covering, landing gear or wheels. To figure out the completed airframe weight, I had to back figure.

Rob's total with 8-cell, 2600 NiMH 48 oz. – 17.9 oz. battery – 5.7 oz. AXI motor – 1.6 oz. ESC - 0.75 oz. 555 Rx – 2.68 oz. servos (4 @ 0.67 oz.) – 0.5 prop = 18.87 oz. for a guestimate. It should be noted that there was no way to tell what servos were used in the model; therefore it is just a guess, and probably the wrong one.

I searched the Internet for reviews and found that Patrick Plawner has an excellent one at http://plawner.net/4/vermont_belle_1300/vermont_belle_1300.html. He states that the completed airframe weight is

17.11 ounces. His weight is for the transparent covered version, not the SE with the opaque covering.

Using my data I figured this plane to fly as an E3D. Here are my figures.

Wing loading: $535^{1/3} * \text{Weight Factor } 1.6 (\text{for E3D}) = 12.99 \text{ oz./sq.ft.}$

Total weight: $535/144 * 12.99 = 48.26 \text{ oz.}$

Fuselage weight:

light – 48.26 * 0.3333333 = 16 oz.

typical – 48.26 * 0.40 = 19.3 oz.

Power required: 19.3 (typical flight weight) * 5 (a constant) * 3.2 (performance factor) = 309 watts of input power

Prop Diameter: (sq. root of $(48.26 * 2.7 [\text{diameter factor for E3D type planes}] / \pi)) * 2 = 12.88 \text{ or 13-inch diameter}$)

Prop Pitch: 13 (diameter) * 0.5 (pitch factor for E3D) = 7.5 or a 7-inch or 8-inch pitch

Battery/cells: I want to use 9 cells because that allows me to directly substitute a Li-Po pack without changing the gear ratio or prop. Also, 9 cells are a little more conservative on the BEC system when using 4 servos. $309 / 9 = 34.33 \text{ watts per cell for NiCads or NiMH cells.}$

Checking my battery chart I found that Sanyo CP-2400SCR cells meet my criteria, while no NiMH cells do. Yes, there are a lot of other cells that will stand up to the current needed, but the CP-2400SCR meets the current and flight time I'm looking for in this type of plane. A 9-cell pack with connectors should weigh about 18.8 oz.

Motor: Setting this plane up for this type of performance with a low cell count requires a fairly high amp draw, therefore, a brushless motor is a must. A brushless motor for an 18.8 oz. NiCad or NiMH pack should weigh about $18.8/2 * 0.6 = 5.64 \text{ oz. total.}$ I prefer to "buy American", so the Astro Flight 05 Brushless (5.25 oz. w/gearbox) and the Aveox 27/26/1.5 (6.44 oz. w/gearbox) are reasonable choices.

Airborne radio system components: It is not reasonable to assume that light micro servos can move the large surfaces on this 3D-capable plane, but experience has shown that servos at the "heavy" end of the micro spectrum should be able to handle the loads. My onboard radio component choices would be; FMA M5 receiver 0.3 oz., 4 Hitec HS-81 (0.52 oz. each), Astro Flight brushless 05 ESC (1.0) oz. for a total of 3.38 oz. From experience, I know that leads, plugs, etc. bring the "published" weights up about 10%, therefore I'd use 3.7 oz. as my predicted airborne radio component weight.

What could the finished plane weigh using the components I've chosen? 17.11 oz. (finished airframe wt.) + 18.8 oz. (CP-2400 9-cell battery), 5.25 oz. (AF 05 brushless), 3.7 oz. (airborne R/C), 1 oz. (13x8 prop) = 45.86 oz. Just to be on the safe side, I'd guestimate 47 oz. ready to fly.

The mathematical numbers for the AF 05 Brushless using a standard Master Airscrew wooden 13x8 prop (prop factor 1.31) and 9-cell CP-2400 pack are just over 40 amps and about 6,000 RPM static with the pack just off the charger. AF 05 Brushless model 806G w/3.3 gear ratio - data used; Kv 2666, Io 1, Rm 0.04. If I built this plane, this is what I'd use.

An interesting thing happened while writing this article. I started this article on August 17. On August 21, Steve Horney's review of this plane was posted to the Ezone Magazine site at <http://www.ezonemag.com>. His review is for the "standard" version, not the SE. Back figuring his weights I found Steve's completed airframe weight to be about 17.21 oz., which is very close to Patrick Plawner's 17.11 oz. measurement. Thank goodness Steve gave a lot of the really important information.

With Steve's information, I was able back figure and understand the power system he used.

Folks, when you write a review, whether for e-power or i.c., let's have all of the important weights, especially the completed airframe weight (CAW). Now, should I order this one? Decisions, decisions, decisions!

Firefly

From: Robert Comerford flyelectric@dodo.com.au



Ken,

Here is another of Bob Meyer's recent aircraft. This one is called a Firefly and is a reduced version of a speed 600 model of the same name that Bob designed some time back. After this long in the game, I am hard to impress. All I can say is WOW! It takes off in a couple of yards then probably straight up if you wish and just about anything you like after that. The plane did not appear to have any vices and I don't know how long it will fly, as Bob needed a break after 10 minutes and brought it down. Part of the reason for the performance of this package is the brushless motor combination. Bob received a small brushless recently and displayed the longevity of flight possible with the technology in another model before transposing it to this new model. The vital data is Mega 16/6, 7 * 600AA cells, homemade ESC with BEC, aeronaut folder (with

smaller homemade hub) about 8.5x5, 1.1m (3.6 ft) wing span, 510 gm (18 oz) flying weight. It is 4-channel, has an all flying elevator, 'almost' symmetrical wing, leading edge is hollow not solid, spoked wheels homemade by a friend of Bob's and it is covered in Bob's usual clear document covering with bits of Solarfilm where necessary.

Regards
Bob Comerford

Model Tech Magic 3D

From: Walter Thyne docwt@lightfirst.com

Here are few shots of my Model Tech Magic 3D. Power is an Aveox 1010/2Y geared 6.1:1 through a MiniDemon gearbox, swinging an 18x10E APC prop on 12 CP-1700s. All up weight (AUW) is 74 oz, thrust is 92 oz. and the static amp draw is 32 amps. It has out of sight vertical for the first two or three minutes. The typical flight time is eight minutes with power to land.



The first picture is of the three Magics I delivered to a club member today after he was bowled over watching the climb performance, hovers and tail slides I did over an eight minute flight (his timing not mine).



The next two show the only modifications needed. (*Only the landing gear presented here. KM*) There is a combination battery access and cooling inlet. The landing

gear has been reinforced, as the stock gear seems to be made of coat hanger wire.

Note that in one shot the ESC-battery leads exit thru the wing saddle. In the other they exit through the former fuel tank hole, now the ESC cooling inlet (-:

Aileron Zero Seven

From: Robert Comerford flyelectric@dodo.com.au



Hi Ken,

Hope you are getting plenty of flying time in. Here is the aileron version of the Zero Seven. This was accomplished by breaking the wing, rejoining with a straight ply brace, modifying for balsa strip ailerons and re-covering with some more cellophane wrap. The undercarriage has been ditched (as it is most likely to be flown off a rocky paddock) and the prop changed to a taipan 7x6. I haven't timed the flights, but they are shorter due to more use of full power as befits the model.

Test flights were in wind requiring full speed to return from downwind legs. I think flight times are about 5-6 minutes (totally unacceptable to me). 950 Kan cells will fix that problem.



The other photo is 10-cell model based on Malcolm Buckmaster's Electric Flash (Mk1) although I would not

blame the designer for not recognising it. The dihedral was removed, ailerons added, front sheeted, body height reduced, balsa cabin added, motor mounting changed and no wheel spats. I like the wing section Malcolm chose for the original, as it has a nice combination of penetration for aerobatics and lift at slow speed for landing. The motor shown in the photo is not that which will be used in regular flight. It is a home built design called a 'Kyostro' built from parts of a decked Astro cobalt, Kyosho 360ST and water pipe. It was built by Greg Smallman in between guitars. The model will use one of Malcolm's ND10 motors geared on 10 cells and is actually built as a spare in case I break my main sports model. Covering may interest some. The wings are Solarfilm, the stab is cellophane wrap and the fin and body is kitchen sandwich wrap (bilo greaseproof paper) ironed on over Balsaloc and spray-painted.

Regards,

Bob Comerford
Glen Innes Australia

Jumping to Conclusions – Readers' Comments

From: David Hipperson ritz@corplink.com.au

Dear Ken,

Got Ampeer and read with great interest as usual. Was the article on the Hitec Eclipse yours? (Yes, KM) The reason is this. I have three transmitters. An elderly but rock solid Futaba "Gold", a Hitec Eclipse and a Hitec Laser 6. Now we in Australia have to have our transmitters checked and certified every two years. Basically gear is put onto an oscilloscope and signal cleanliness read. The object being, hopefully, to prevent "splash" between frequencies.

The Eclipse has always operated well in the flying mode but has sometimes been "jittery" with the aerial down doing range checks. The gear was purchased new and has been kept well in a custom carry case (not knocked about). Other crystals have been tried with similar results but in the air the gear is good even at extreme ranges when tested in a sailplane.

Under test in the electronics shop both the Futaba and Laser 6 show much stronger, cleaner signals. The guy who does our testing also says he trusts older gear much more than some more modern products. Not so many features but in his belief more reliable components.

Regards,
David

My new Eclipse is doing just fine with all my planes. Please remember that it was the "old, trusty" Focus 4 that was giving me fits. KM

From: Stephen Madjanovich stevnjan@ils.net

Ken,

Thanks again for the great time at Mid Am. As for transmitters I had one of the first Hitec Prisms and it was great (as far as a simple computer system goes) with an excellent manual. Now I have an Airtronics Stylus (I had two in case one needed repairs I would have a back up but after no problems in the 6 or 7 years I owned them I sold one off this spring).

If you don't like the Eclipse return it and look for a used Prism 7X (costs less) or Stylus. Styli can be gotten for between \$250 and \$350 for the transmitter alone and are great. When you are ready to move up, keep the transmitter and get the expansion cards! I think some older Airtronics radios such as the Infinities and Visions supported all brands of PPM Rx (like the Prism 7X and Stylus do) and I think one or both versions of the RD6000 and the RD8000 do as well.

Just suggestions if you really don't like the Eclipse.

Stephen Madjanovich
Keswick, Ontario

My Eclipse is working just fine. I've figured out how to program just what I need now. My only objection to the Eclipse is that to me, it is bulky. As I said, I love the "feel" of the Cockpit. KM

Receivers and Sig Cub?
From: Dereck Woodward DereckW@comcast.net

Hi Ken,

Just got the September *Ampeer* - seems to be the only regular virtual world periodical around - you must be doing something right!

"Jumping to Conclusions" was a thought-provoking piece. Following such basic faultfinding techniques could save a lot of folk both money and grief. What I'd like to add to that is, unless you have the right training and equipment - get crashed gear professionally checked.

Absolutely! KM

A ways back, when I'd not long had the knack of flying RC (and was thus the hottest flier in the club!), one of my models attacked the nearest planet. The planet survived, though the model was a sorry mess. I cheered up immensely when I found the receiver apparently worked with another battery and servos - the stuff in the model having gone to the Great Hobby Shop in the Sky.

Despite how much I knew (according to me, of course) I sent that receiver off for checking. Got a call from them a few days later - seems that the main PC board had cracked right across its width and the two halves were only being held together by the copper lands of the circuitry.

Figure out how long they'd have lasted if I'd put that RX back in a model

Seems I was ahead of the game for once...
I saw mention of a Cub conversion in the *Ampeer* - I'll have to drag my e-camera out and send you some more

shots of my Sig 1/5th scale Cub conversion. (*You can read Dereck's article on this conversion in the September, 2003 issue of Quiet & Electric Flight International. KM*) Larry Norcutt, of Columbia, MD, took the attached shot at the Loudoun County E-Vent last month.



84" span, 8lb 20z, 20 x 2000mA NiMH cells and a MaxCim 13Y on 3.3:1 and a 15x8 APC-E - flies just like a Cub! The photo attached is her about to touch down - she's still a tad nose heavy, hence the near full up elevator as I flair to land. Superb kit, really simple conversion - I hardly did anything, beyond fitting a funny shaped 'engine' under the cowl and a larger 'gas tank' up front.
Looking forward to *Ampeers* to come

Regards,
Dereck

Listen to your Multiplex Cockpit!
From: Vic Tyber Fraytdog@aol.com

I had a similar incident in which I had minor elevator problems with my 8 oz hand launch sailplane. It would get "hit" about once every 10 flights, which would result in a no damage nose in. This was only a minor "inconvenience" until I used my beloved Cockpit in a new Multiplex Micro Jet speed 400. On the first test flight after a thrilling 2 minutes of wonderful flying the "MJ" nosed into our club asphalt runway at full speed! The new foam really protected the receiver and servos, since after plugging in the ejected battery pack I got good servo response. However two elevator hits in two different models got me thinking and acting. Multiplex repair (Ernie) found a defective elevator pot in my transmitter and quickly replaced it. That solved my problem! By the way Ernie Pritchard previously installed a toggle switch to allow positive and negative shift receivers to be used with the Cockpit.

Take care,
Vic Tyber
Safety Harbor, Fl.

I followed up Vic's lead with a call to Ernie Pritchard, 1005 North Aviator, Payson, Arizona 85541

1-928-474-2528. In our conversation I found out that he is the authorized service center for Multiplex radios in this country, even though Hitec purchased Multiplex he still has the contract. I was surprised that Glen at HitecRCD didn't inform me of this when we had our phone conversation when I was seeking a negative shift Multiplex Cockpit transmitter. Now I have a transmitter I don't really want and I'll be ordering the one I do want! He told me that he's also figured out how to negative shift the Evo, but noted that it is a one-way trip on the module modification, as he can't install a switch, like on the Cockpit. Here is the information on Ernie's service and prices. He also told me that he has NiMH batteries available for the Cockpit and other Multiplex radios. KM

Multiplex Service

Ernie Pritchard
1005 N. Aviator PKY
Payson AZ 85541
erpritchard@cybertrails.com
2003 Price list

Service	Cost
Futaba negative shift modification	
RF Module Car/3030/4000/Evo	50
Cockpit	35
Pico	35
IPD 7 RX	15
IPD 9 or 12	20
Futaba/Multiplex switch inside radio	
P-3030/4000	65
Cockpit	45
Single-stick conversion. Cockpit/3030/4000	
Slider on either side of Profi each	115
Cockpit hand launch switch	70
Spectra or Futaba module modified for Profi	70
Profi Stick top switches/buttons installed each	50
Update old Profi RF module for new xtals	40
Per hour rate for all other work	25
Multiplex batteries now in stock.	40
3000ma NiMH 3030/4000 with MPX Connector + shipping.	\$45
1800ma NiMH Cockpit/Pico with MPX Connector \$35 + shipping.	\$35
All work is FOB Payson, AZ	

R/C Trainers

From: Robert Comerford flyelectric@dodo.com.au

Ken,

Why is it so? (with apologies to Julius Sumner-Miller)
I have had my hands at the controls of hundreds of aircraft, often for their first flights. In this time I have found two aircraft designs that I would class as

outstanding trainers. These aircraft exhibit the ability to almost fly themselves. What is also interesting is that both these designs continued to exhibit this trait with varying wing loadings, varying CG placement, bent bodies, small or large propellers, and varying motor alignment.

Now this is not to say I have not had other designs in my hands that I considered good trainers but, and this is a big but, they all only exhibited this trait when in one state. Varying CG, power, torque (propeller size), motor alignment, etc. would often put each of them back in the 'next step up' category.

Looking at what was different I can only find one factor. Both designs have a polyhedral type wing. Does this make for a more stable and forgiving platform than a simple dihedral?

The simple answer is, yes, usually. Why do you think the designer of the Piece O' Cake called it that?

(<http://www2.towerhobbies.com/cgi-bin/wti0001p?&I=LXE615&P=7>) "Piece of cake" is American slang for something that is very easy. KM

I have flown many other designs that have been identical in almost all other respects and each one had to be set up 'just right' before they would

- (1) self-stabilise and also
- (2) respond positively to the rudder in all conditions.

This had often led me to wonder if ailerons with a small amount of dihedral may not be more suitable in a trainer than rudder/elevator.

This thought has been reinforced by the fact that I have had several examples of one or two IC 'trainer' designs with ailerons over the years that have proven to be far more suited to the beginner's hands than some 'stable' rudder/elevator models.

Your thoughts!

Regards
Bob Comerford

I had noticed this with my trusty old Olympic 650. I'm not sure that an aileron equipped trainer is better, since I've flown a lot of aileron trainer that exhibit a tendency to the have the aileron authority go away when the plane is slowed down and nosed up for landing. This can be a bit bothersome for the beginner, to have to think about using the rudder. Right now I'm thinking that an REM (rudder-elevator-motor) with a polyhedral wing of the proper airfoil might just make the best trainer of all. KM

Figuring the Power System for a Great Planes Fokker Dr. 1 60 ARF.46-.75, 60"

My friend Smitty called and wanted to know how to power this plane. He told me that he had a Hacker B50 13S geared 6.7:1 and a Hacker B50 11XL. He noted that the 13S uses a 14-cell pack of Sanyo CP-2400 cells and the 11XL uses a 20-cell pack of the same cells. He also

noted that he wanted to use an 18x10 prop. He also wanted the plane figured with Li-Po cells, just for "grins."

First I went to the Tower Hobbies site and found the data for the plane; 1312 sq.in. and 9.1 pounds (145.6 oz.). Unfortunately, Tower Hobbies didn't note the engine that made the plane come out at 9.1 pounds. They offer a combo with the O.S. .65LA 2-stroke, but in the customers who bought this product also bought area they noted the Magnum XL-80RFS 4-stroke. For back figuring I used the .65LA at 18.9 ounces. I allowed 12.5 ounces for the airborne radio components and guessed at 2 oz. for the empty tank weight. I've found that my finished weight is usually 5% - 10% higher than my component weights, so I elected to us 5% on this larger plane, while I use the 10% figure on smaller planes. The completed airframe weight (CAW) back figured = $9.1 * 16 = 145.6$ oz. - 7.28 oz. (5%) = $138.32 - 18.9 - 12.5 - 2 = 104.92$ oz. or a guestimate of 105 oz. or 6.56 lb.

When gathering data on successful multi-wing electrically powered planes, I found two distinct groups. I found a "high" performance group that included Waco, Stearman, Hawker Fury, Jungmann and Great Lakes types. A "lower" performance group appeared and included the D-VII, Nieuport, and Gypsy Moth. The Dr. 1's performance falls into this group.

My data for a "lower performance multi-wing":

Weight Factor (WF): 1.6

Performance Factor (PF): 1.6

Prop diameter factor (DF): 1.53

Prop pitch factor (PPF): 0.55

Target Wing Loading: $1312^{1/3} * 1.6$ (WF) = 17.52 oz./sq.ft.

Target Flying Weight: $1312/144 * 17.52 = 159.6$ oz.

Required Input Power: 105 (CAW) * 5 * 1.6 (PF) = 840 watts of input power.

I have a cell chart that I made that provides suggested watts per cell and maximum watts per cell for sport and sport scale planes. These watts per cell figures are based on what are acceptable flight times for me. Please note that the maximum watts per cell are NOT the maximum watts the cell is capable of producing, but based on the minimum acceptable flight time! For Sanyo CP-2400 I have 36 watts per cell for suggested and 41.4 for my maximum. Therefore at the suggested watts per cell the number of cells would be $840/36 = 23.33$ cells and at the maximum watts per cell the number of cells would be $840/41.4 = 20.29$ cells.

As luck would have it, Dave Grife used the Hacker B50 11XL on 20 cells turning an APC 18x10E in his "Ike." (See the May 2003 Ampeer) I had his data, so I didn't have to figure it. Thanks Dave! The info Dave provided was that it pulled 44 amps and had 5,500 RPM.

What is the all up weight (AUW) going to be for this model? 105 oz. (CAW) + 13 oz. (Hacker w/gearbox) + 42.2 oz. (20-cell CP-2400 pack) + 12.5 oz. (airborne radio) = 172.7 oz. + 8.6 oz. (5% unaccounted for) = 181.34 oz.

The wing loading would be 19.9 oz. per square foot. That should still be totally acceptable on this size model.

Is it the prop right? The diameter equals $(\sqrt{(181.34 * 1.5 * [DF]) / \pi}) * 2 = 18.61"$. Therefore the 18" diameter should be okay. Prop Pitch = $18 * 0.55 = 9.9"$. A 10" pitch should also be just fine.

It looks like Smitty can fly this plane with what he has. Time will tell.

Dave Grife is now using Li-Po batteries in his "Ike." Dave is using two Thunder Power packs configured 3S4P. They are wired in series to provide the voltage needed. The capacity of the 3S4P pack is 7800 mAh, so he's using the 1950 mAh cells. These Li-Po packs should work for Smitty just as well and reduce the all up weight (AUW) by a little less than 10 ounces.

One other thing to keep in mind is that this project is for the intermediate to expert pilot, as the Dr. 1 is notably difficult to control on the take off and landing! Smitty is an expert and should have no trouble with this project. When he completes it, I will get some photos and let you know how it works out.

Eagle Tree Systems Flight Data Recorder Update

New features and accessories available now!

From: Bill Parry billpa@comcast.net

Dear Fellow Modeler,

We're pleased to announce new features and accessories available in our Flight Data Recorder line. These are in stock and ready to ship right now!!! Here's what's new:

Electric Expander - with the electric expander add-on accessory, your recorder now measures electric motor battery current and voltage and prop RPM, and the application displays these parameters, plus wattage and cumulative amp-hours. This accessory is great for finding out what your motor is really doing in the air, not just on the bench!

Electric Expander Specifications:

Motor Voltage: 0 to 50 V

Motor Current: 1.6 amp minimum, approximately 68 amp maximum recorded, temporary surge to 120 amps

RPM range: approx 100 RPM to 20,000 RPM

Weight: Expander, magnets and RPM sensor - approx 1.5 oz.

Measurements: 2.5" x 0.75" x 0.25"

Racer Expander - the Racer expander adds two of the most requested features to our Recorder - RPM and dual temperature capability. Great for tuning your engines under real flying conditions!

Glitch analysis - the latest versions of our Flight Data

Recorder and application analyzes servo signals and detects three types of glitches - missing pulses, short pulses, and long pulses. Great for debugging intermittent transmission problems in flight!

Configurable logging - with the latest Recorder, it's easy to turn on and off logging features. This lets you save Recorder data space by not logging parameters you are not interested in!

Slow flight support - by popular demand, we've published a simple modification you can make to your Recorder to support slower flying models.

http://www.eagletreesystems.com/app_download/Slow%20Speed%20Modification%20Manual%201.0.pdf Higher speed flight support coming soon - let us know you need it!

We thank you for your continued support, and look forward to hearing your feedback!

Bill Parry
 Eagle Tree Systems, LLC
<http://www.eagletreesystems.com>
 4957 Lakemont Blvd SE
 Suite C-4 PMB 235
 Bellevue, WA 98006
 toll free sales: 888-432-4744
 service/support: 425-614-0450
 Fax: 425-614-0706

Motor/prop combo	After Time in secs	Volts	Amps	Watts	RPM
HS 480/Gunther 5 X 4.5	30	7.6	13.9	106	15030
"	120	7.3	12.9	96	14430
HS 480/Graupner 6.5 X 4 Semi-scale	30	7.3	18.1	131	12120
"	120	7.1	16.4	116	11490
HS 480/Hi-mark 2.1:1 G/B 8 X 4 Graupner Slim prop	30	7.8	9.1	72	8820
"	120	7.4	8.4	63	8370
HS 480/Hi-mark 2.1:1 G/B 9 X 6 APC "E" prop	30	7.4	13.6	101	6570
"	120	6.6	13.1	89	6300

Jamara 480 Motor

From: David Hipperson ritz@corplink.com.au

Dear Ken,

Thought this might be of interest to you. I recently purchased four of the Jamara 480 motors from Hillcott Electronics (Walter Wilkinson) in England. These are what I refer to as long can 400's being enclosed and fitted with the 2.3mm shaft. My testing so far has been limited, but after the recommended eight-hour break-in these things

really go. Fitted with a direct drive 7x3 prop one was drawing 19 amps on 7 cells without sign of over heating or distress, but on a 2:1 gearbox it swung a 9x6 APCe electric prop at 12/13 amps and provided real pull. Considering these motors cost me less than \$9 each including postage they seem worth a try. The wind is obviously significantly hotter than the similar motor fitted to my Cermack New Timer. Best Wishes to you and your family from Down Under.

David Hipperson

*David also provided the data presented in the chart.
 Thanks for your testing David!*

*Here are the motor constants from eCalc:
 Jamara Pro 480: Kv=2470 Io= 0.78 Rm 0.166
 KM*

RC Hobbies Online

I received an email from my old friend Carol Scanland informing me that RC Hobbies in Waterford, MI now has a Web presence. Here's her email.

Hi Ken,

Miles has built a web site for the shop (www.rchobbies.org), and we were wondering if you would list us on the site. I would really appreciate it if you would. Thanks in advance.

Your friend,

Carol

RC Hobbies - 921 W. Huron St., Waterford, MI. 48328
 Phone: (248) 681-1441 Serving the R/C modeler since 1976. Please stop by or visit us online.

Upcoming PMAC & Oakland Yard Swap Meet Sunday, October 19

Oakland Yard, Waterford, MI

Swap Tables \$15 (must preregister)

Adults: \$5 - Seniors (55+) \$4 - Children (under 15) \$2
 Dealer Sites Available

Retailers selling & demoing products, Swap Tables,
 Indoor and Outdoor Demo Pilot Only flying - Local
 Clubs on hand - Door prizes

Contact: Dave Dobrin 248.673.0100

**Composite Systems Development
Formerly; Cavazos Sailplane Design**
From: Robert Cavazos email: (below)

The email address and business name has been changed: rcav@aol.com to robertcsd@adelphia.net and Cavazos Sailplane Design to Composite Systems Development. We will be doing business as CSD.

We are making model airplanes a fast as we can. New designs have been put on hold until we can catch up. There is still a waiting list of 2 to 6 weeks depending on the aircraft ordered.

Currently the Twister has been very popular and the best selling aircraft in our stable. It seems it has just the right proportions to take advantage of each new trend that comes along. Currently the Lithium polymer cells (Li-poly) 2100 mAh rated about a 9 cell pack. Weighs 132gms. (4.6oz.) Three cells in series (3S) are lighter than the conventional 7 cell 600AE power pack, weighing 151gms (5.3oz.), and can discharge at 16 AMP continuous. Couple these cells with a Brushless motor and Speed control and you have quiet a combination. This equals to flying around 75 mph and speed runs over 100 mph for around 15 minutes for a 14 oz R/C airplane.

In the CSD--Slope Scale Line of aircraft, designed

by Brian Laird, we have been a non-stop production of kits going out the door. The F-20 has been the most popular but the most difficult to manufacture--so wait time is lone on this little gem. Other Slope scale aircraft have been able to see there new homes earlier.

Thanks

Robert Cavazos
12901 Foreman Ave.
Moreno Valley Ca. 92553
(909) 485-0674
E-mail robertcsd@adelphia.net or robert@rcglider.com
Web: <http://www.rcglider.com>

Upcoming E-vents

**October 11 1st Annual JR Indoor Electric Festival-
Presented by Horizon Hobby**

Saturday, October 11, 2003, 9:00 a.m. until 5:00 p.m.
Four Seasons Golf Dome, 5000 East Broad Street,
Columbus, OH 43213 - The flight area is 85,000 sq.ft.
Activities: indoor flying, seminars, manufacturers' demos,
vendors and swap meet activity.
check out the Web site at www.tooltex.com/jriefest.htm.

**October 19 PMAC & Oakland Yard Swap Meet, Waterford,
MI – Contact: Dave Dobrin 248.673.0100 or Sterling Smith:
248.673.2883**



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

The Next Meeting:

Date: Saturday, October 04 **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!