the Ampeer

March The EFO Officers 2005

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The Next Meeting:
Date: Thursday, March 3 **Time:** 7:30 p.m.
Place: 5089 Ledgewood Ct. W, Commerce Twp

What's In This Issue:

Correction to "I Hate When This Happens!" Article, Feb. 2005 *Ampeer*

I really do hate when this happens. It seems that I transposed 2.3 to 3.2 in my mind when writing the article. You may or may not see the error in your copy of the February issue of the *Ampeer*. As soon as David Hogue of Clayton, NC sent me the following note in an email, I changed both the Acrobat .PDF and HTML versions of the Feb. 2005 issue. If you downloaded early in the day that I sent out the notice, or got the paper version, the error is still there.

Here's what David pointed out; "2.3mm is not 1/8th, 3.2mm is. 2.3mm is the shaft diameter of a sp400, which makes it more compatible with available gearboxes than the smaller 2mm."

Thanks David. 2.3mm is approx. 3/32 inch for you "converters" out there.

Prop Adaptors

I received two emails regarding prop adaptors. The first is from Dereck Woodward and the second from Bernard Cawley. It is interesting to note both of these men are hoping that we can get prop adaptors with our motors and that they are of good quality.

Subject: I wish this was a prediction!
Author: Dereck Woodward
DereckW@comcast.net

Hi Ken,

A Happy New Year to you and yours, and thank you for the Ampeer - February was especially interesting.

Your predictions for what's going to happen soon were neat, though mostly slanted to electronics. Being one of those e-fliers who determines motor size and type by pestering people like yourself who understands this stuff, here's one that is definitely on the mechanical side.

Ask any 'slimer driver' if they'd buy an engine they couldn't take out the box and bolt a suitable prop straight onto.

Yet, and the February Ampeer touched on the matter about the "Ammo" vs. Chili Pepper motors, we still wrestle with getting a prop onto our electrics almost constantly. I'm referring to the 'prop driver' in its many forms, and why

are we still stuck with this aberration?

Astro has it right, always had. Their gearboxes have hefty shafts, with threads for a securing nut and a rigidly press-fitted driver for the prop to seat against. Okay, if you want to tinker with gears, you need to know if there's useable pinion / spur combinations for a motor, buy them and have pinion remover / fitter tools to make the swaps.

For example - the dear old 035 Cobalt can be run with four different gear ratios, but you need two gearboxes, two pinions and the previously mentioned tools to achieve that.

Next in the pecking order comes Model Electronic Corporation's gearboxes. Nearly as tough as Astro's 'boxes, but with a vast range of gearing that's field-swappable using two hex keys.

But they still employ those pesky prop-drivers! I suspect a 1/4" Astro gearbox shaft from their smaller 701/711 type gearboxes could be made to fit, but I don't have the workshop equipment to prove it.

So, we're still down to buying a 'prop adaptor to fit a prop onto a motor or gearbox in far too many cases. Few shops are able to carry many of these devices, so often we're down to scratching through mail order sources, and asking around how to fit props to various combinations. How many manufacturers sell motors that come out of their boxes really ready to accept a suitable prop? Not a lot!

Somewhere near one of my flying sites is a 15 x 10 prop on a Graupner driver, lost near the top of a long vertical line. With shipping - neither prop nor driver was obtainable locally, and they came from separate sources - some $40.00's worth sailed off into the boonies that day. That little package flew off a motor that had set me back nearly $500.00 with its inline gearbox (with pristine plain 'propshaft), ESC, UBEC and motor mount - hardly the sort of bargain basement item you'd expect to be 'nickelled and dimed' over.

Not so much a prediction as a plea or forlorn hope. Manufacturers - when do we get flight-ready electric motors that will accept props like 'wet power' engines?

(*Dereck followed up with the following after my initial response to him, thanking him for these thoughts. KM)*

Nothing's changed much! My first electric - back in 1985 - came with a prop adapter. It was a remarkably complete and well-engineered kit that I reviewed for RCMW back in England. It didn't have to be dismantled for pack swaps either - still a rare trick for a high winger - and had good, yet unobtrusive battery cooling.

The first S400 I designed myself, I hadn't a clue about how to fasten a glow prop - all that was around in 1992 - to the skinny little shaft sticking out of the motor. Try one involved some flexible plastic tube that was forced onto the motor shaft, and then the prop was forced onto that tube.

I fired it up by plugging it into my home-made 7 x 500AA Nicad pack while in a very small bedroom - my 'dorm room' in military base accommodation.

I never did find all the pieces of the prop. It spun up, spun off and hit a wall or something hard so fast I never saw it go. Fortunately it missed me, in its entirety and in fragments. Took longer to find a prop adaptor than designing and building the model, as hobby shops didn't know what they were and mail order was still in the future.

My theory is probably too blunt for our commercial world. There's no standardization because pretty much everything we buy is piggybacked off stuff developed for other purposes and is often duplicated by Chinese /Asian low pay scale industry, as that's the cheapest route to US hobby shops.

Astro prefers to do it right! If Bob would after-market his gearboxes with MEC style field swappable pinions, that would be the fat lady singing.

Props - thank goodness for APC and their -E. As they did with glow props, they put all my wood props into the home decorating business - as paint stirrers.

But, and it probably comes down to the above 'standards of what do we bolt them onto, why do they have such piddling little holes in them? They all seem to need reaming out, and the thought of bolting a 700W impelled 15 x 10 onto a motor with a shaft the diameter of those neat little rings APC include with their props does not seem a good idea.

I occasionally think that my beloved old OS25FP wasn't all that bad after all.

Regards,
Dereck

Bernard generally has something to add about each issue of the Ampeer, and it is always appreciated. You'll see that this also fits under the heading of Prop Adaptors as you read his ending comments.

Subject: February Ampeer Comments
Author: Bernard Cawley
bernard.e.cawley@boeing.com

Time for my monthly "talkback".

On the Race-E and the trials and tribulations....First of all, I hope that you've shared all that directly with Thayer and Tom. I have to admit I didn't look to closely at that plane, but clearly there's some real power system confusion going on!

(*I have been in direct contact with Thayer and Tom over several "problems" regarding not enough information and information that doesn't seem to fit. They have been very responsive and have taken note of some of the problems that I have pointed out, and will try to see that they don't happen in the future. They are absolutely first rate in response time and are trying very hard to make Fly RC the absolute best RC magazine available. KM*)

I am very familiar with the little AXIs and the 2212/34 in particular, since I have had up to three of them in airplanes, two of which I fly more than anything else I have. A 7 inch prop on that motor on 2s lithium cells is silly - I'd be surprised if it goes to 20W input with that combination. I fly 'em on 3s, with 10x7SF APC props! That's about 95W. I've static-tested the 2208/26 but I don't have the numbers at hand. I'll try to remember to drop you a note with numbers for the setup you're showing for the virtual Race-E, though my intuition says you need more prop - like an 8x6 - to get really useful power.

On synthesized receivers: I have a Shadow-1. It's a wonderful little piece of equipment, and I dream of having two or three planes so equipped so that when I go to a meet with them and my Evo 9 synth I can simply check the frequency board/impound, find a channel no one is using or very few are using, then set both my Tx and receivers to that channel without ever having to emit any RF. And as a receiver, so far the Shadow-1 is as impressive as the current generation Bergs - very good indeed.

I have one of those Cambria mounts in my Big-T (currently AXI 2826/10, 13x8E direct drive, 3s Thunderpower 7800 pack (really 3s4p), about 440W in). It's a great mount, rigid and lighter than it looks. I'm impressed.

On Ammo and ChiliPepper motors and mounting patterns and shaft sizes..... this is an area of intense frustration for just about anyone at the moment. Why the heck we have 2mm, 2.3mm, 3mm and 3.2mm shafts on motors all in this general size/power class (say <150W) just boggles my mind. 2mm shafts make the motors compatible with GWS EPS-300/350 gearbox parts (with an adapter ring to support the smaller diameter motor). 2.3mm, as in S400s, of course make them more amenable to gearboxes (or prop drivers, if Kv is low enough) originally created for S400s, again with appropriate adapters to support the much smaller diameter motor. Then there are the 3mm ones - the same diameter as the output shaft on the aforementioned GWS EPS-300/350 gearboxes, and the little MPJet gearboxes sold by Hobby Lobby and Great Planes. MPJet's red and blue outrunners of both sizes, and the Chinese "Skatty" motors (some of them) have 3mm shafts. Of course 3.2 mm is 1/8 inch and matches all the "oh-five" prop drivers - this is what one needs for the little AXI 22xx motors.

Then there's getting the prop on the prop adaptor - another mess.

I just got some samples of outrunners in four sizes from 50W to 200W from yet another Czech company - Potensky - and they have a pressed-on threaded stud that is M6 as the prop adaptor - much in the same fashion as the old Astro ferrite 020/035/etc. had pressed on adaptors. With APC's new metric SF/S400 prop adapter rings, finally a motor where you just grab a prop and put it on again. Testing will show if the motors are any good though - I don't know yet.

I guess the bottom line of this is "I feel your pain!!" <G>

Take care.
Bernard Cawley

It seems to me that I had not given very much thought to prop adaptors before, since 90% of my "fleet" are powered by Astro Flight products which come with them.

If you are looking for prop adaptors, you should check out E Cubed RC at http://www.azarr.com/propsandadaptors.htm. Speaking of Azarr, he wrote back some of his predictions. KM

Predictions from Azarr
azarr@ecubedrc.com

Here's what I see happening. The proliferation of "flat foamies" has enticed a bunch of glow fliers to try

E flight. The next step will be (it's already happening) small 3D type balsa planes i.e. The Extreme Yak and the Little Banshee. Next step will be the size of plane that has dominated the RC industry for more years than I can count, the ".40" size planes.

Azarr
www.ecubedrc.com

PS: I also sell the Cambria mounts.

Thanks for sharing your thoughts, and also the note on the Cambria mounts. Sorry I missed that. I did check http://www.azarr.com/gearbox.htm and found several really useful motor mounts and gearboxes, seems I had forgotten that you carry them. KM

Royal C-47
From Walt Thyng wthyng@earthlink.net

Great issue (*Feb. 2005 Ampeer KM*)! No problems opening it in Adobe PDF.

Really appreciated the detailed info in the Ammo/CP motors as I have started doing some business with Tower again.

Finished my Royal C-47. No flights yet; need to refine my homebuilt retracts. Weight came in at 10.5 lbs with 24 GP3300s. Power is two Kyosho Endoplasmas w/ GP 600 gearboxes @ 3.8/1. Initial tests with 9x7 Graupner 3-bladers only gave 35 amps. I want to be able to pull 40 at take-off because our field is short and grass. I know that's pushing the Endos, but I'm pretty good at throttle management. I can squeeze in a 10 inch prop, so I'm going to try the Graupner 10x7 3 blade. Unfortunately, right now I only have one of them. My digital camera is dead so no photos.

I'm finally ready to make the leap to Li-Pos and after doing my own kind of spreadsheet analysis I'm going with the Apogee line. It was a close call between them and Kokams, but I've had some less than happy experiences with FMA and that tipped the balance.

I just checked the site and didn't see the dates for the 2005 Mid-America. I assume it's July 9 &10. I'm planning to come up for Friday and Sat. That way I don't have to burn a vacation day.

I learned my lesson last year; I won't bring my whole fleet again. Certainly the C-47 if it's still alive. And maybe my Direct Connections Sea Fury to be finished as Reno Race #15 Furias.

Keep up the good work,
Walt Thyng

The planned dates are July 9 & 10 for the 2005 Mid-Am. KM

Awesome Website!
From Ken Welch (EFO member)
kwelch@campbell-ewald.com

Ken,

If you haven't seen this site it's awesome. The photography, music and flying is great.

http://flashstreaming.oracle.com/extreme/

Click on the pilot and after it opens click features in the upper right corner to see the movie.

Lots of other interesting things to play with there as well.

Have fun.
Ken Welch

Thanks Ken. Yes it is pretty neat, and a good way to pass some time on these cold and snowy days! KM

Upcoming Cedar Rapids (IOWA) Skyhawks E Fun Fly Aug 6 & 7, 2005
From Plenny Bates plennyb@mchsi.com

Ken,

We are having our second annual electric fun fly August 6 & 7, 2005. For details go to:
http://www.crskyhawks.org/index.htm

Click on events or electric fun fly and you will get the web site.

Or go directly to:
http://www.foxcoins.com/skyhawks/funfly/

While at the SkyHawks site you can open the photos of last year's e fun fly. Several images there of Bob Livin but none with his new big Aeronca as he did not take it to that event.

Thanks,
Plenny Bates
2505 White Eagle Trail SE
Cedar Rapids IA 52403-1547
319-362-2969

Indoor Flying

I had just finished reading about the JR Indoor Electric Festival in the March 2005 Fly RC and checked my email. I was about to send Doug Ward congratulations on his scale win, when there was a note from Doug. Wow, weird.

I sent him the following:

Hi Doug!

Just reading about you in Fly RC. What a coincidence! Nice picture of you and description of your plane. Congratulations. Somehow, I just can't get into the indoor thing.

I've moved, so you'll need to change my postal mail and phone info. It is now;

Ken Myers
5256 Wildcat
Croswell, MI 48422
Phone: 810.679.3238

Later,
Ken

I left that personal info incase you missed it! KM

Doug's response:

Ken--

Thanks for the new info (*Regarding the Acrobat Reader KM*) and kind words.

Indoor flying is only feasible if you have a place to do it, right? Well, we got lucky when I found a single gym where we fly every Wednesday from mid-October to mid-April for a total outlay of $300 spread among seven of us. This happened nearly three years ago and we are having a ball. As you might guess, indoor scale is a real challenge, especially in our size of airspace; so two-ounce-per-sq-ft. models are pretty much the rule. Heavier than that and the walls get much closer sooner! For example, my lightest model weighs 16 g and that's heavy by some peoples' standards.

My current scale project is a Nieuport 11, well started and maybe a month from being in the air. Our basic sources for these aircraft are mostly rubber-powered models, which means that there are far too many choices to make before building. That can get really frustrating. With readily available light RC equipment you can build a 20" span model as an original rubber model without modification except to leave out blast tubes and hooks. Many of them finish up as RC versions weighing no more than their rubber counterparts, sometimes less.

I have been meaning to tell you of my problems getting the *Ampeer* to work. The last two issues have been unavailable on my computer for reasons I don't understand. I noted that you commented to others who were experiencing the same difficulty. Did something change?

Yes and no to answer the question about whether I changed something about the Ampeer online. Bottom line is, if it is not working okay for you, please email me and I'll get you a version that will. KM

Doug Ward

Speaking of Indoor Flying, Don Skiff, editor of the Ann Arbor Falcon's Peregrine's Post, presented the following information on indoor sites in southern Michigan. It was in the February 2005 issue. KM

Indoor Flying this Winter

Dan Schwartz sent us this information:

Here's the list of flying sites that I mentioned at the meeting, and their locations and websites:

Waterford, MI

For several years now, the Oakland Yard has been hosting indoor flying. The schedule is usually 20-minute segments. Slowflyers, Parkflyers, Free-Flight, Aerobatics, repeat.

Very large dome. Double soccer field and 80+ ft ceiling. This is where the indoor NATS were last year. I have no problem flying any of my planes in there. Even the fast ones. They have a snack bar, so you can eat dinner between flights.
Oakland Yard (Golf Dome, Waterford MI)
Map and Directions at:
http://www.oaklandyard.com/model_aviation.htm

$18.00 per night
March 26th 9pm - 1am
April 30th 9pm - 1am

Grand Blanc, MI

New this year is the Golf dome in Grand Blanc. The Genessee Field House. They mostly run 3D Aerobatics, but are very friendly and are happy to set aside special times for other aircraft types.

It's a full size golf dome, and while it has a slightly lower ceiling than Oakland Yard, they run the flight line along the longer side of the rectangle, so the pilots can spread out more. Plenty big enough for me to fly any of my planes (But most of mine are speed 400 and smaller)

Genesee Field House (Golf Dome, Grand Blanc MI)
Map and Directions at:
http://www.geneseefieldhouse.com/
$15.00 per night
Schedule is currently unavailable. Call them for more info...(810) 655-2200

Fenton, MI

Here is one we just found out about. A friend of mine stopped in and convinced the owner to set up flying sessions. It's a double soccer field, and a fairly high ceiling. I don't have any trouble flying any of my slower planes in there, and most guys also fly 3D aerobatics. Sessions alternate from Aerobatics to slow flying throughout the evening. Flying has been very well received there, and they've scheduled many more sessions. They also have a restaurant and arcade separated from the field by a glass wall so spectators are comfortable and safe.

Premier Indoor Sports (Warehouse style Soccer Field, Fenton, MI)

Map and Directions at:
http://www.premierindoorsports.com

$15.00 to Fly
March 19, 26 8pm – 11pm
April 2, 16 8pm – 11pm
Flying has been very well received there, Located off Torrey Rd. South of Thompson Rd.
For Additional Information Call
Premier Indoor Sports 810-714-3530

So, those are the regular options for this winter's indoor flying. Hope to see you there!

I found on the Sanilac Model Aviation Club (SMAC) Web site (http://www.krugair.com/) that the Birchwood Sports Dome, 2851 Keewahdin Rd., ***Fort Gratiot, MI*** *48059 Phone 810-385-3663 (http://www.bwsportsdome.com/) has been used for indoor flying. It is still used for car and truck RC vehicles. The February schedule doesn't show any flying. Fort Gratiot is really the "north end of Port Huron", if you aren't familiar with the area. I noticed that it can be "rented". Maybe that's what the SMAC folks did, but it is still worth looking into, as the dome's schedule is posted on their Web site. KM*

Seabee Questions

From: Walter A Burlone, 546, 11th Avenue, Laval-Des-Rapides, Quebec, Canada H7N 4C6

In the middle of January I received some excellent questions about the data I provided on powering the Seabee in the January 2005 issue of the Ampeer. I thought that some of you might have had the same questions, so I'm sharing my response to Walter with you. KM

Hi Walter,

I'll try and answer your questions regarding my article on powering the Seabee:

1- What is the function of superscript factor 1.5 in the wing area in sq.ft.?

The example was $338in^{2}/144in^{2} = 2.3472222$ sq.ft then raising it (an area) to the 1.5 gives cubic feet, in this example 3.5960963 cu.ft. Cubic wing loading is a much better indicator as to how a plane will fly in relationship to other planes than area wing loading.

2- What is the relation of the first equation half ($338in^{2}/144in^{2}$) to the 3.6*3.5 second equation half, and where does the 3.5 factor come from?

The first half of the equation yields the 3.6 (that is 3.5960963 cu.ft rounded to the nearest tenth) as noted in the explanation above. The 3.5 is a cubic wing loading factor for the airframe based on the fact that the completed airframe weighs approximately 1/3 of

the total weight of the aircraft. A typical sport plane has a cubic wing loading of 10 – 12.99 oz./cu.ft. (I've included my documentation so that you can see why cubic wing loading is a better value to use than area wing loading when designing planes to fly like others in their group, disregarding physical size changes.) The range for the finished airframe would be 10/3 = 3.33333 to 12.99/3 = 4.33333. I chose 3.5 and 4 as they are fairly representative of this group, while 3.33333 and 4.33333 might have given slightly more range, the 3.5 and 4 should be close enough. This really isn't an "exact" science and the more decimals used do not make the answers any more valid than those with fewer decimal places.

3- Why in the second Seabee calculation, the 3.5 value changes to 4?

Hope I answered this for you in the answer to number 2. It is the heavier value for the finished airframe weight based on a cubic wing loading of between 10 and 12.99 oz./cu.ft.

4- The 2.86 factor, does it represent the total airplane weight proportion?

Yes. Using the factor of 2.86 makes the finished airframe weight, without radio, motor, batteries, etc, 35% of the total weight. How? The inverse of 2.86 is 0.3496593 or 35%. This is the weight on the high end. I have found that a finished airframe weight can be as low as about 28% of the total flying weight. In that case the multiplier would be 3.57, while the heaviest airframe weight was about 36% of the total flying weight. The inverse of .36 is 2.77777778, and would be the multiplier. I chose 2.86 because a lot of sport planes of this size have about this relationship of airframe weight to total weight.

I deleted the rest of your question 4, as the above should make it clear how I arrived at my "factors" and what proportions they relate to.

If you have further questions, please feel free to contact me. These were the best questions I have had in many years. Excellent! I know at least one person reading the *Ampeer* is paying attention!
Sincerely,
Ken

I received a very nice thank you note from Walter with some photos of some his planes. Sorry, there was no information with them. You can write to Walter at the address given at the heading of this article if you have any questions. I'm sure he'd love to hear from you. KM

An interesting looking twin

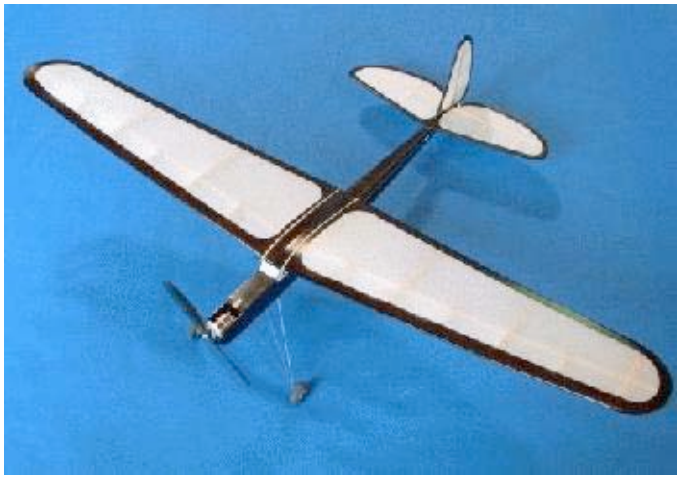
Race-E Updated Information
From Harry Stewart
Edited by Ken Myers and Harry Stewart

Harry was kind enough to send several emails containing much of the information that was not presented with the February 2005 Fly RC pullout plan and to answer some of the questions I had about it the Race-E in the February Ampeer. I have combined and edited the emails for this article, and Harry has also looked it over and edited it as well. Here is what Harry has to say about his Race-E design. KM

You are correct that it is really just a sport aerobatic model. I designed it to be a sort of an aileron trainer but the brushless motors took it to another level. People noticed a similarity to the H-1, so for the magazine article I did it in the blue and silver colors of the H-1 replica.

The first prototype, the black and yellow one, was powered with a MGK brushed motor and prop, the

black prop that you couldn't identify, and used a two cell E-Tec Li-Poly 1200mAh battery. It was sort of an evolution of an earlier design, the Electric Flash as published in *Model Aviation* or Flash-E as kitted by BMJR Models (www.bmjrmodels.com).



Flash-E, kit B-308 by BMJR Models (BMJR Web site image)

Performance with the MGK motor was just adequate. It would loop and roll and fly inverted but it didn't have much vertical performance, but it sure looked good in the air.

The second prototype, the black and orange one, has an AXI 2208/26 on a two-cell E-Tec 1200mAh Li-Poly battery to start with. Later on, I decided that the APC 8X3.8 SF made it a better flyer. Also, when they became available, the Tanic two-cell 830's seemed to provide a little more punch than the E-Tecs, so that is how that one is flying now. I also reduced the span from 44" down to 40 1/2" and enlarged the ailerons a bit to improve the roll rate. Now it had lots of performance with true vertical capability. (Not hover or 3-D performance)

The third prototype, the blue and silver one, has an AXI 2208/34 on a three-cell Tanic 830mAh Li-Poly pack. The prop that I finally settled on is the APC 9X4.7 SF. I tried a 10X3.8 SF and the performance was fantastic but it pushed the motor, ESC and battery way past their limits. The 9X4.7 SF keeps everything under 10 amps at full power, which is perfect. It probably flies a little faster, and the vertical is even better, than the orange and black one. Most flying is done around half power. Both the brushless outrunner planes have Castle Creations ESC's. I made some construction changes and enlarged the ailerons a little bit more but essentially the third one and the second one are the same.

Equipment:

The first prototype had a MGK motor and prop (the black prop that is in the pictures), a FMA 5ch receiver, a GFS ESC, a two cell Li-Poly, (830mAh to 1200mAh) and MX 30 servos (using one for each aileron). It was covered with Litespan on the wing and tail surfaces and MonoKote on the fuselage. According to my notes, a MGK motor will spin the MGK prop around 6000 rpm at 6 amps.

The second has an AXI 2208/26 motor, an APC 8X3.8 SF prop, (I first flew it with the MGK prop or the SkyRunner GF equivalent but decided that I liked the APC better), a Castle Creations' Phoenix 10 ESC, a Berg 4-ch Stamp receiver, a two cell Li-Poly (again either 830mAh – 1200mAh) and MX 30 servos on the rudder and elevator and a MX 50 in the wing for the ailerons. (using only the one servo for the ailerons). It is covered in Litespan on the wing and tail surfaces and MonoKote on the fuselage. On a cold morning, and with a cold battery, the 2208/26 turned the APC 8X3.8 SF 6850 rpm at 6.2 amps.

The third has an AXI 2208/34 motor, an APC 9X4.7 SF prop, a Castle Creations Phoenix 10 ESC, a Berg 4-ch Stamp receiver, a three cell 830 Li-Poly battery and three MX 50 servos (again using only one servo for ailerons). It is covered in Nelson Lite blue and silver with Ultracote registration numbers. On the same cold morning with a cold battery, the 2208/34 turned the 9X4.7 SF almost 6900 rpm at 7.7 amps. In my notes, on a warmer day, I have recorded higher rpm and current draw figures on both the 2208/26 and the 2208/34

All the planes used DuBro 1 1/2" light wheels.

I've taken all the equipment out of the first prototype, so I can't weigh it. The second one (orange and black) weighs 280.5 grams (9.894 oz.) with the two-cell 1200mAh Li-Poly battery and 276.5 grams (9.753 oz.) with the 830's. The third (blue and silver) weighs 300 grams (10.582 oz.) with the three cell 830's. I used the 9 to 11 oz. range to account for different equipment, material weights, and builder technique.

As to the plan questions:

F-2 and F-3 are identical and make up the gear block. F-8 should be on top of and across F-1 for the latch tab. The hatch opens from the front of the windshield to F-1 less the width of the F-8 and F-9 pieces. The axles are .047 wire doubled back on itself for about 5/8" and then angled out for the wheel. They are attached to the carbon fiber gear legs with

JB weld, epoxy or CyA and shrink tube. I first saw this method on the Herr Starlite.

The plan was drawn in CAD full size, and then reduced.

Race-E, kit B-314 by BMJR Models (BMJR Web site image)

Brian (BMJR) does a really nice job with his laser cut kits and while I haven't done a complete Race-E from one of the kits, I've done enough to know that the pieces all fit and go together really well. We typically do two to three prototype kits to get everything correct.

Other clarifications:

Originally I did allow for the longer 2212/34 motor, and obviously I took a picture of it in the airplane. I think it would be another great choice for the airplane. However, I have never flown it with one, and now I can't figure out, for the life of me, why not. Somewhere along the line I switched it to the 2208/34 before that particular model got flown.

Based on my experience with the AXI 2212/34 in another plane, using the three-cell 830mAh with an APC 10X4.7 SF, I think it would be a very good combination. Out of curiosity I checked the performance of the 2212/34 under the same cold conditions and it turned the 10X4.7 SF 5800 rpm at 6.6 amps.

One thing about motors that turn the big, flat APC slow fly props, if you pull the power off suddenly, those big blades act just like a brake and really slow the plane down noticeably. In some situations the airplane appears to stop.

While the vertical performance with the 2208/34 on three cells is pretty fantastic, the performance isn't far off with the 2208/26 on two cells. Overall I think the two-cell 2208/26 is my favorite combination.

I was pretty conservative in locating the CG on the plan. There is nothing worse than a tail-heavy airplane but when the Race-E gets a little nose heavy it doesn't land as smoothly as it should. If it sort of drops out of the air on the last foot or so on landing. It's a good idea to move the CG back until you can wheel land it. It will fly better in the air too. There is a lot of room in the hatch area to move things around to get the CG where you want it.

One final thought. Another of the pictures shows some mechanical differential for the ailerons, which I thought would be necessary. However, as I get more and more time on the Race-E's, I have reduced the differential to zero. I think they fly better with zero differential. They seem smoother in the roll.

Upcoming March EFO Meeting

The March EFO meeting will be held at Rick Sawicki's house; 5089 Ledgewood Ct. W., Commerce Twp., MI 48382. Rick's phone number is 248.685.7056. You can use his address in MapQuest to find the location.

The house is on the Southwest corner of Ledgewood Drive and Ledgewood Court West with the house facing the Court. (Commerce Road ... to Ledgewood Drive...south on Ledgewood Drive to the sixth house on the right.) Ledgewood Drive is on the south side of the road only (off of Commerce Road)... 1 mile east of Duck Lake Road...or 2 1/2 miles west of Boggie Lake Road. Coming from the east on Commerce Rd., it is the first street on the left past the lake.

Rick's house is a two story colonial with a white picket fence around the court. There should be no problem with parking since he has both a circular drive and regular drive ...in addition, parking is allowed on Ledgewood Court West (not Drive).

Rick was gracious enough to invite us back again after having our February meeting there. We certainly had a great February meeting at his house! Thanks Rick!!! (Photos and notes from the February meeting will appear in the April issue of the *Ampeer*, as there is not enough room in this issue.)

Very Important:
EFO Members, please note the day, time and location of the March EFO Meeting.

Upcoming E-vents
2005

April 16, (Tentative), Electric Model Aviation Show and AGM, Toronto Aerospace Museum, Toronto, Canada - Robert Pike, 416-724-7615 pikefly@sympatico

April 21-24, 2005 Southeast Electric Flight Festival
We have moved the event earlier in the spring so that we can get some cooler weather! Average high is 79 degrees :-)
DATE: April 21-24, 2005
WHERE: Americus, GA - Hodges Hobbies
EVENTS: LMR Sailplane competition on Thursday, Open flying the rest of the weekend.
WEBSITE: www.koolflightsystems.com/seff.htm

May 15 - Rain Date: May 22 - KISHWAUKEE R/C FLYERS 2nd Annual Electric Fly-In
Registration: 8:00AM Fly: 9:00AM
Site: Kishwaukee R/C Flyers Club Field, Dekalb, IL
Contact: Brad Evenson eflyer201@atcyber.net, phone: 815-522-3344 (after 7pm) or Rocko McCombs nightz13@yahoo.com, phone: 815-756-9313 (after 7pm)

July 9 & 10 TENTATIVE! Mid-America Fun Flies 2005, Northville Twp., MI for information contact Ken Myers via email at kmyersefo@aol.com or phone: 810.679.3238 Check the EFO Web site for status frequently, http://members.aol.com/kmyersefo/

August 6 & 7 Cedar Rapids (IOWA) Skyhawks 2nd Annual E Fun Fly, info at: www.foxcoins.com/skyhawks/funfly/, contact Plenny Bates, 2505 White Eagle Trail SE, Cedar Rapids IA 52403-1547, 319-362-2969

August 13 & 14 Sharks All Electric Fun Fly #2, Sheboygan Falls, WI, Web site www.mcallisterdesigns.com/elec05.htm for map and updated information.

November 12 & 13, The Las Vegas Soaring Club SuperFly IV, Located at Bennett Field in Las Vegas, Nevada, Information will be updated at the date approaches on our website at www.lasvegassoaring.org,

Please get event info to Ken Myers ASAP for 2005

The Ampeer/Ken Myers
5256 Wildcat
Croswell, MI 48422
http://members.aol.com/kmyersefo

The Next Meeting:
Date: Thursday, March 3 **Time:** 7:30 p.m.
Place: 5089 Ledgewood Ct. W, Commerce Twp
(see March Meeting Note in this issue)