# the

## March

## The EFO Officers

## 2010

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#### The Next Meeting: Date: Thursday, March 11, 2010 Time: 7:30 p.m.

Place: Ken Myers' house (see this issue for address)

#### What's In This Issue:

From Rich Flinchbaugh - Electrics at the US Scale Masters Championship - Sparrowhawk and More - The February EFO Meeting - Help With Using Spektrum Radios - Crimping Warning – Upcoming Keith Shaw Birthday Party Electric Fly-In Info - How Drive Calculator Can Help In Prop Selection even if the Motor is Not in the Database - Wing Cube Loading, Once Again – A Couple in Interesting Links - Upcoming E-vents

## **From Rich Flinchbaugh**

Rich sent a very nice "recovery" card to me and included a couple of good photographs.



The first photo shows a small seaplane making a pass over the small pond at the Peaceful Valley Campground, home of the NEAT Fair. This pond is a nice "plus" for the NEAT meet.

The second photo is of Rich and Ginny. The plane is a 1931 Sikorsky S-39 and the photo was taken at the Greenville Air Show on Moosehead Lake in Maine. There were 20 built, but only 3 remain to fly. Rich thinks it would be a nice model. He noted that he's seen a few S-38s, but not an S-39 model.



It should be noted that Al Muroc, http://www.classicaero.com, has models of both available. If you are into seaplanes or Sikorsky types, this is the site to go to.

For the S-39, Al has plans available in three sizes; 1/6, 1/8, and 1/12 scale with Laser Cut Kits and Vacuum Formed Parts available in 1/6 and 1/12 scale.

For the S-38 twin, he has plans available in three sizes; 1/6, 1/8, and 1/12 scale. Laser Cut Wood for is available for the1/6 Scale S-38 along with a parts package!

Al frequently brings these beauties to the Mid-Am. Check them out soon!



#### the Ampeer

#### Electrics at the US Scale Masters Championship Randy Smithhisler Randy.Smithhisler@PACCAR.com

#### Ken,

I just wanted to pass along some great news from the 2009 US Scale Masters Championship event. My electric powered Piper J-3 "Cub" placed third in the Team Scale category. I feel very fortunate. I believe that only a few electric powered models have ever placed at the Championship event. Jeremy Fursman from Snoqualmie, WA did an outstanding job of the flying the J-3 for me.



In addition to the third place award we took home plaques for the "Highest Flight Score-Team" and "Most Realistic Flight-Team". The J-3 was built from a SIG kit and is powered by an AstroFlight geared 90 brushed motor with (36) 2400mAh NiCad batteries.



There were also two other electric powered

models there competing. I had my 1/4 scale Piper J-4 (20th place in Expert) and Grant Lord from Vancouver, WA competed with his beautiful Fly Baby Bipe (21st place in Expert).



Grant's big bipe has a brushless motor and Li-Poly batteries for power. It flew great and scored a 90.58 flight score average.

I have enclosed a few photographs.

Best regards, Randy Smithhisler (Edgewood, WA)

#### Sparrowhawk and More

From Dereck Woodward dereckw@comcast.net

#### Hi Ken

Just read the new 'Future is Electric' - good stuff as always. Great to see Dave Hipperson's Sparrowhawk work-over. That model is fascinating, of a very sleek and interesting prototype. Yes, I've seen the 'real one' but only on the ground way back before we left the UK. The good bit, Dave got rid of that colour scheme! Not as bad as the experiences you later describe in this newsletter concerning that Stearman, but the Sparrowhawk's colour scheme as it comes out of the 'big shiny box' is something I know a little about. That red, silver and registration 'G-AESZ' come off the entirely different size, looks and designer/builder 'Chilton DW1' that I designed a 54" span model of back around 1986 - 87. I built and flew her in England, using documentation from "Aeroplane Monthly", an English magazine that leans to older aircraft.

#### the Ampeer

The only similarity between the two types was they both had the wing on the bottom!



The photos are one of my model and the other of the inspiration. Dave's a 'class act' and did it right. When I pointed this somewhat glaring error out on the E Zone, it was laughed out of court, with some folk suggesting I shouldn't criticize readymade models, which are all perfect by definition.



Your thoughts on amending the Stearman! Strikes me as basically a lousy design, with a primary aim of getting folk to buy one. As one who knows well what happens to a bad kit review, the online and other comments about it in that area don't surprise me. I'm very selective over what I review these days, like hardly anything. The last two both came from Sig! Aside from the discussion on the decalage, that nose-heaviness suggests that the structure is just badly designed. A lighter tail end framework, a little nose length 'fudge', not like it's every going up before scale judges, some internal equipment re-location and it wouldn't have needed any ballast. A model that size needing four ounces of nose weight is not very good. There's a bit of sarcasm in there – if you can't resist using this, edit freely!

Actually, you can see I did not edit it Dereck. It is not a totally lousy design. I believe that, maybe, it was brought to market just a little too quickly and more care could have been taken in preparing the manual and a couple of adjustments could have been made to the basic airframe and equipment placement to make it even better. All flight reports, by intermediate and advanced pilots, indicate that it is a good flier and a fun to fly plane. I am very impressed with the overall engineering, as it would have gone together very well as an ARF. It seems quite popular, and pretty much rightly so, for the most part. Time will tell how my highly modified version will turn out. KM

And finally! I have to tell someone – actually, about everyone! Sue, my wife, just accepted a position of Vice President in the development area of a major non-profit in Chicago. After over fifteen years in the DC area, we are now frantically preparing to paint up this place to rent or sell, pack and move to an apartment in the middle of Chicago and the inevitable bunch of stuff that moving demands. The aim is to drop off the world, work our rear ends off to re-establish our lives a long ways north-west to get back to normalcy ASAP and re-appear doing normal stuff real quick! There will be a lot of change – for starters, neither of us has ever lived in an apartment high-rise smack in the middle of a big city before. Suspect one change will involve me making smaller models around A123 batteries – I don't fancy Li-Poly batteries on the 50th floor with no balcony!

Google maps tells me that your neck of the woods is around 4-1/2 hours drive around the bottom of the lake and east a bit from Chicago. So, after all the advice you've given me over the years – still haven't forgotten about you prodding me up to ten cells, whereupon I found that electrics could do more than narrowly miss the nearest planet in flight – I reckon it won't be long before I can come around to Mid-Am and thank you personally. Lunch is on me, even if I have to bring sandwiches in!

All the best to you and your family for the upcoming holiday season, and I hope to meet you soon.

Regards Dereck Woodward

## The February EFO Meeting

The February EFO meeting was held at Jim Young's in Brighton, MI. Thank you Jim for hosting!

It was an excellent meeting with a lot of projects to share. Since this is the building season here in Michigan, several of the projects were shared at various stages of completion.

**Tim Young** showed his hovercraft and a display model that he made as part of a school project. He loves scooting the hovercraft about the house!



Tim also shared his Blu Baby. It recently was involved in one of the Spektrum receiver glitches that have shown up at the Ultimate Soccer Arenas. Joe Hass has followed up on the glitches and did a presentation for the Skymasters on how to avoid them when flying at the Arenas.

Information on the Blu Baby can be found on RC Groups at

http://www.rcgroups.com/forums/showthread.php?t=681556

Plans are available for various sizes of this foam construction plane from 24" to 52". The plans can be found in the thread.



**Richard Utkan** scratch built a Fred-e from foam. He looked at the photos and created a TLAR (that looks about right) model. He said that it is a very nice flier.



**Dave Stacer** shared his flying wing Aggressor with us.

http://jgrc.biz/storefront/index.php?act=viewProd&productId=262

He'd purchased several items for this build from a place on the Internet called Deal Extreme. He followed up our meeting with an email containing the following information about Deal Extreme.

"Here is the website I was talking about last Thursday.

Everything has free shipping - takes about 1-2 weeks for shipment.

http://www.dealextreme.com

The majority of the RC stuff can be found under Helicopters

http://www.dealextreme.com/products.dx/category.801

http://www.dealextreme.com/details.dx/sku.20082 Tower Pro 9 g servos for small indoor stuff \$5 http://www.dealextreme.com/details.dx/sku.12859"





**Denny Sumner** has been building a prototype Super Sportwin along with the designer, Mark Rittinger. He had the fuselage ready to share at the meeting. It has a knockout covering job and super looking cockpit. More information on this model can be found in the RC Groups thread at http://www.rcgroups.com/forums/showthread.php?t=1075719 &highlight=super+sportwin

Look near the end of the thread to see Denny's almost completed plane. This twin features retracts as well.



Arthur Deane showed his foam scratch-built Eagle. He enjoyed watching a similar model fly at the last Mid-Am and decided that he had to have one. He did make a change to the airfoil. His is a Clark-Y rather than the typical KM-type.



Hank Wildman shared the features that he's building into the rework of his A-6 Intruder. It has beautifully engineered split flaps and an excellent hinging system on all surfaces. He had it hooked up so that he could demonstrate the surface movements.

**Jim Young** showed the progress on his Gloster Meteor. He'd just finished up the gear doors, made from carbon fiber, on the wings. More information on this build can also be found on RC Groups at http://www.rcgroups.com/forums/showthread.php?t=1161755



**Ken Myers** showed the progress on his Super Stearman, which he is converting from the E-flite PT-17 Stearman ARF. This has turned into a "fulltime job" for him.



After the show and tell portion of the meeting was over, we all retired to Jim's well-stocked workshop where we talked "airplanes" well into the evening. Jim shared even more of his Gloster Meteor project and answered some questions concerning the many designs and kits he is marketing.

It was an EXCELLENT meeting, and again we all wish to thank Jim for his wonderful hospitality.

## Extremely Important Information Regarding the Upcoming March EFO Meeting

## **EFO Members READ THIS!**

The next EFO meeting will be on **Thursday**, <u>March 11</u>, 7:30 p.m. at Ken Myers' house. This is a break from our traditional first Thursday of the month meetings!

As usual, everyone with an interest is welcome. Bring along your latest project in whatever stage of construction and share the fun! See you all on Thursday, March 11!

## Help When Using Spektrum Radios

As mentioned earlier, there had been a few problems with using Spektrum radio systems during the indoor flying at the Ultimate Soccer Arenas. Joe Hass gathered information and did a presentation at the Skymasters on how to properly setup and use Spectrum radios. He sent along the following information via email. KM

## Ken,

Here is a wealth of information supplied by Horizon. It can be passed on to whomever you like. (I looked on the Internet for this information and could not find a link to it. I've posted the .pdf file to http://homepage.mac.com/kmyersefo/Customer-care-pak2-1.pdf KM)

Did you know that when you bind a Spektrum system the stick positions when you bind become the failsafe? More than once, when I have bound I gyrated the sticks as I was trying to push the button and bind at the same time. If there was a loss of communication the aircraft would revert to the crazy position I pushed the stick to.

But there is an even subtler scenario...

You just finished your WizBang 400, left all the sticks centered and bound the system.

On the first test flight you needed some up trim. Then you lost connectivity between the

transmitter and receiver on a subsequent flight. What is the airplane going to do?

It will go down as it reverts to the settings when it was bound. That results in a dive.

Doesn't that sound a lot like what the original writer was describing?

There are a bunch of things that I learned from about 3 hours worth of discussion with Horizon. Most of them are covered in the attached .pdf file.

Joe Hass

Regarding the writer in the latest AMPEER...

I have used DEANS Micro Connectors very successfully in high ampere, but small applications. They are called Micro Connectors 2B Part Number 1221.

They are available in a number of multi pin applications. The neatest thing is that the pins can easily be removed for soldering or reconfiguring male/female pin configurations.

One More Item for Successful Use of Spektrum Radios from Ken; be sure to read and heed the Best Practices information at the Spektrum site. http://spektrumrc.com/Community/InstallationBestPractices.aspx

**Crimping Warning** From Robert Fishwick Vancouver Canada

Hi Ken,

I noted your reference to crimping the connectors on the Li-Poly battery. I too used to crimp the connectors. One day I was doing my Safety test of gently pulling the connector whilst holding the wire, when lo and behold, the connector started to slide off the wire. About 20% of my batteries had solder connections, the remainder were made up at about the same time and I thought that crimping would save me a lot of time since there were so many batteries to make up.

I immediately checked all of the other batteries that had crimped connections. Was I ever glad that I did. About 65-70% of the batteries had loose connections. Be assured that, at the time of construction, all connections were checked before the contact was inserted into the red and black shells. ALL were a good tight crimp. I removed the shells from all of the contacts and soldered the lot. I now no longer have to worry about the wires coming off in flight.

All the very best to you, Robert Fishwick

I agree with Robert that it is a good idea to check your battery connections frequently. It is just an excellent safety practice. I've used Anderson Power Poles since entering electric flight. I have the APP crimper and I've never discovered intentionally or inadvertently a loose crimped connection. Robert didn't say how he crimped his connectors, but I've found the APP crimper, and most likely the similar, but less expensive West Mountain crimper, to provide excellent crimps. The really important thing is to check the integrity of your connections whether they be crimped or soldered. It is just a good safety practice. Thanks for the reminder Robert. KM

Problems with Long Battery Lead Wires Gary Gulllikson, Garden Grove, CA

Hi Ken,

the Ampeer

I have inherited a twin-ducted fan GWS ME-262 brushless 2028 inrunner powered, ready to fly. It had twin speed controls mounted on each engine nacelle and battery wires from a 2200mah 3S Li-Poly pack in the nose through "Y" connection to the speed controls mounted on each engine nacelle, The total length was about 28 inches. I had a number of nice flights before it crashed due to one motor cutting and asymmetric thrust.

To make a long story shorter, I recently read on the E-Zone that battery wires longer than a total of about 18 inches, cause voltage spikes that eventually kill the electrolytic capacitors in the speed controls, which is followed shortly by the FET's frying and an unexplained crash.

I am now mounting twin CC 36 speed controls in the bottom center of the wing and routing battery wires after a "Y" connection much more directly to the Li-Poly pack in the nose. According to Castle Creations, their speed controls have capacitors that can cope with battery wires around 18" total from speed control to battery pack. Much longer wires require adding one or more special electrolytic capacitors across the battery wires near the speed control.

BTW, I have disconnected both red wires from the speed control and am using a Park BEC to run the Spektrum AR6000 receiver and four HS-55 servos. BTW, it is OK to lengthen the speed control-to-motor wires and speed control-toreceiver wires as needed.

The above applies to twin electric powered prop planes as well. Just warned a buddy who is building a nice Wowplanes B-25.

Although this information has been discussed in the past, it is not generally well known by newbies to multi-engine electric power setups. I thought you might want to mention this in the *Ampeer* newsletter to save somebody some grief.

Gotta get started on my Velie Monocoupe for the current vintage fun build contest on E-Zone Scale Electric Plane forum. Working from enlarged Flyline plans and laser cut parts from David Plumpe.

Hope all is going well with you and your projects,

Gary Gulllikson

Well, there you go Gary. Thanks for the mention. This same topic has come up with the Gloster Meteor that Jim Young is building. KM

## Put This One On Your Event Schedule! Keith Shaw Birthday Party Electric Fly-In

From Dave Grife grifesd@yahoo.com

The Balsa Butchers will once again be hosting the "Keith Shaw Birthday Party Electric Fly-In" at their field near Coldwater, MI. The event will take place on June 5 and 6, 2010.

Contest Director: Dave Grife - E-mail: grifesd@yahoo.com or Phone: 517.279.8445

Please e-mail or call with any questions

The Flying Field will be open Friday, June 4 for early arrivals

Saturday, June 5, hours are from 9 a.m. 'til 5 p.m.

Sunday, June 6, hours are form 9 a.m. 'til 3 p.m.

Directions: Quincy is approximately 4.5 miles east of I-69. Clizbe Road is approximately 1.6 miles east of Quincy. The Flying site is approximately 1.5 miles south of US-12 on the west side of Clizbe Road.



I love this meet. There is a lot of laid back flying with some of the Midwest's best pilots, Electric Flight Designers, Builders and Authors. I wouldn't miss it! It is a lot of fun for everyone with an interest in electric flight. KM

#### How Drive Calculator Can Help In Prop Selection even if the Motor is Not in the Database By Ken Myers

EFO member, Arthur Deane asked how to find a starting prop for a Himax HC 3510-1100 when it doesn't appear in the database for Drive Calculator (http://www.drivecalc.de).

Here is what I told him.

You'll find the data for the HC 3510-1100 here http://www.maxxprod.com/pdf/HC3510-1100.pdf

The real clue is the weight, 89g and Kv 1100 89g \* 3 (three is the factor I use for a maximum of 3 watts in per gram) = 267 watts in, they say 250.

The newer Li-Poly voltage under full throttle load is  $\sim 3.55v$  per cell, sometimes even better depending on brand, while older Li-Poly cells were closer to 3.5v per cell. 3S = 10.5v to 10.7v at full throttle load 267 watts in / 10.7 = about 25 amps. Those numbers are if you want to push the motor.

I prefer using 2.5 watts in per gram of motor weight and sometimes less if nose weight is more important. 89g times 2.5 = 222.5 watts in. 222.5 / 10.7 = 20.79amps, so I would target a prop that would have about a 21ish amp draw at full throttle.

The Kv is really too high to consider 4S for most applications.

When a motor doesn't appear in Drive Calculator double click under the Kv number in the program and input the Kv of the motor you are looking at. Here it is 1100Kv. Look through the list for a motor or motors of similar weight and type. In this case it is an outrunner. I found the KD 22-20L at 85g and the Torcster Gold 2814/8 1000 at 95g. Drive Calculator gave the following results;

Torcster APC 10x5E 21.3 amps at 10.7v 228 <u>watts in</u> Torcster APC 9x7.5E 24.5 amps at 10.7v, 262 <u>watts in</u> KD APC 10x5E 19.5 amps at 10.7v 209 <u>watts in</u> KD APC 11x5.5 25.2 amps at 10.7v 270 <u>watts in</u>

Basically, I would try an APC 10x5E first on a 3S Li-Poly and find out what it pulls on this particular motor using a power meter and go from there. The 10x5 is also noted in the Himax data. A less efficient motor might require more pitch to get the amps up, while a more efficient motor might require a drop down in diameter to something like a 9x6 to keep the amps in the desired range.

HC is Himax designation for outrunners. 3510 is stator diameter, the first two digits, and the length, last two digits, a non-useful number, in millimeters. 1100 is the Kv or RPM per volt OUT not volt in! The three most important things about a motor are its type, brushed, brushless inner runner or brushless outrunner, weight and Kv. While motors with similar weight and Kv will have performance differences based on the magnets used and the windings it should be remembered that the less efficient motor with the same weight and Kv will require a larger diameter and/or higher pitched prop to load it the same as a more efficient motor with the same weight and Kv.

#### Wing Cube Loading, Once Again By Ken Myers

The February 2010 issue of *Model Aviation* contained some information that once again proved the value of wing cube loading, or as I like to call it cubic wing loading. Besides the absolutely fantastic article by Bob Benjamin about rebuilding a crashed E-flite AT-6, there were several other articles about the AT-6.

Jeff Troy reviewed two AT-6s from Airborne Models. One was a 777 sq.in. glow version and the other a 264 sq.in. electric powered version. When Troy wrote about their flying qualities he said, "Despite their differences in size and power, these Texans behave similarly in flight."

If area wing loading is used to compare the two planes, the glow version has a wing loading of 24.9 oz. per square foot while the electric version is 14.72 oz. per square foot. Using those numbers, a pilot would NOT expect them to have similar flight qualities.

When the CWL is used, the glow Texan calculates to 10.72 oz./cu.ft. and the electric calculates to 10.88 oz./cu.ft. Ah, they do "fly" similarly! Troy was right! ;- )

Two other AT-6s were also reviewed. The Top Flite Gold Edition ARF has a calculated CWL of 12.88 oz./cu.ft. based on a reported 730 sq.in. of wing area and a weight of 9 lb. 3 oz./147 oz. The E-flite 25e Texan ARF has a calculated CWL of 13.1 oz./cu.ft. based on a reported wing area of 455 sq.in. and a weight of 4.6 lbs./73.6 oz.

Based on the CWL numbers, the Top Flite and E-flite models would prove a bit more challenging to fly compared to the Airborne Models AT-6s.

As Bob Benjamin pointed out in has article, "Remember what I mentioned about this being a good scale model but not much of a trainer? It helps to understand that the full-scale version was designed to be demanding to fly, to prepare soon-tobe WWII fighter pilots for the real thing."

Looking at the CWL categories I have created reiterates what Bob and the others noted in their flight notes about the various AT-6 models. The CWL is in ounces per cubic foot.

CWL Oz./cu.ft.	Typical Type	Notes:
0.00 - 2.99	Indoor	
3.00 - 4.99	Backyard	
5.00 - 6.99	Park	Some glow planes appear, mostly 3-D glow types
7.00 – 9.99	Sport	A competent, graduated RC pilot will have little trouble flying
10.00 - 12.99	Adv. Sport	Requires a higher understanding of the principles of flight
13.00 - 16.99	Expert Sport	Even more demanding than advanced sport
17.00 & up	Expert	You really have to be an excellent pilot to stay "on top" of these planes.

The CWL numbers for the AT-6s indicate that they are for advanced sport pilots, just as their full-size counterparts were for pilots in advanced training. Don't let the word "Trainer", which is often associated with the AT-6, allow you to think of it as anything but an advanced trainer.

This demonstrates why knowing the CWL is so very important. If CWL or wing cube loading is new to you, you can learn a lot more about it by visiting the EFO site table of contents at

http://homepage.mac.com/kmyersefo/sitetoc.html and looking for the articles on CWL.

#### A Couple in Interesting Links

I'm not a great believer in the next great power source coming down the pipeline, but fellow EFO member, Dave Stacer, sent the following link. It apparently shows a RC model car being powered by a hydrogen fuel cell electric system.

http://www.engadget.com/2010/02/03/horizondebuts-h-cell-2-0-hydrogen-fuel-cell-system-for-rc-cars/

Bob Aberle sent along a link. It is a free, on-line Electric Power Magazine with reviews and construction articles.

http://www.electricflyermagazine.com/

It appears that Henry Holcomb is doing it. Here is the editorial and masthead page. http://www.electricflyermagazine.com/page2editorial.html

You might want to check these links out soon.

## Upcoming E-vents

**February 24, Wednesday** Skymasters Swap Shop -Only \$3 admission and \$10 for a table (no advance reservations). An auction will be held at the end of the evening! Larson Middle School. 2222 E. Long Lake Road, Troy - 7:00 PM

March 11, Thursday EFO monthly meeting, 7:30 p.m., Ken Myers' house, 1911 Bradshaw Ct., Commerce Township, MI 48390, phone: 248-669-8124, Everyone with an interest is welcome

**May 2, Sunday** Radio Control Club of Detroit Watts Over Wetzel (W.O.W.) - Electric Fly-in, Pilot's meeting 8:45, RCCD Flying Field, located in Wetzel State Park, CD Mike Pavlock (586)-295-3053

## 2010 EFO Dues

A Notice from Ken Myers The dues for EFO membership remain at \$20. Once again, if you join or rejoin the Midwest RC Society for 2010, I will pay your EFO dues into our EFO treasury. Anyway you want to look at it, you can save \$20 in 2010 by joining Midwest.

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The Ampeer/Ken Myers 1911 Bradshaw Ct. Commerce Twp., MI 48390

http://homepage.mac.com/kmyersefo

The Next Monthly Meeting: Date: Thursday, March 11, 2010 Time: 7:30 p.m. Place: Ken Myers' House