

**the**

**Ampeer**

May		The EFO Officers		2005	
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Ampeer subscriptions are \$10 a year US & Canada and \$17 a year worldwide		The Next Meeting: <b>Date:</b> Saturday, May 7 <b>Time:</b> 10:00 a.m. <b>Place:</b> Midwest RC Society 5 Mi. Rd Field			

**What's In This Issue:**  
Quotes Without Comment – Upcoming Coldwater, MI E-fly - The March EFO Meeting - More on Motor Selection - Update on the Alfa Models Corsair Review - New Texas Indoor Club - Some Thoughts from Joe Hass - Dave Thacker on Li-Po Batteries - Gasoline Engine versus Electric Motor - Li-Po Cells versus NiMH - New Ryan Aircraft Zero - Toledo 2005 & Keith Shaw's Czechmate – Upcoming E-vents

**Quotes Without Comment**  
By Ken Myers

I recently saw these words in the March 2005 Model Aviation magazine.  
p.103 AMMO ad  
Jason Noll, "Ammo brushless motors are the most efficient and responsive .20-size motors I've ever used."  
p.64 DPM ad  
"Electrics aren't just for the park anymore!"  
p.34 photo center photo caption  
"Hobbico SuperStar EP is intended for glow power. Bob explains in the text how to convert it to electric power."

**You are invited to attend the...**  
**"Keith Shaw Birthday Party Electric Fun Fly"**

June 4 & 5, 2005  
At the Balsa Butcher's Flying site in Coldwater Michigan – (see map on page 2).  
Contest Director: Dave Grife - E-mail:  
grifed@yahoo.com or  
Phone: 517.279.8445 –

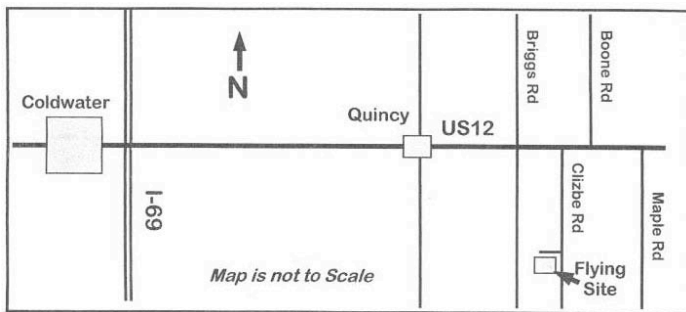
Please e-mail or call with any questions  
The Flying Field will be open Friday, June 3 for early arrivals

Saturday, June 4,  
hours are from 9 a.m. 'til 5 p.m.  
Sunday, June 5  
hours are form 9 a.m. 'til 3 p.m.  
Landing Fee is \$10 for the weekend.

**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.

**Places to Stay:**  
Holiday Inn Express 517.279.0900,  
Red Roof Inn 517.279.1199,  
Econo-Lodge 517.278.4501,  
Ramada Inn 517.278.2017

All except Econo-Lodge are located near I-69 & US-12. Econo-Lodge is on the west side of Coldwater.



### The March EFO Meeting

Once again Rick Sawicki hosted the March meeting at his house. It was a very well attended meeting, and we all enjoyed Rick's hospitality and snacks!

The evening started by sharing a quick look at some of the planes brought for show and tell and a few folks gathered round Ken's computer as he went over the value of using cubic wing loading in determining how a given model will fly when compared to others. They also got a little preview of the plane that Ken is in the process of designing.

The "official" meeting started with the description of the three planes.



James Maughan was very excited to describe his Switchback built from a Mountain Models kit (<http://www.mountainmodels.com>). He couldn't praise the Mountain Models kit high enough. He has built several of their kits and rates them as absolutely excellent. His Switchback uses an AXI 2212/34, 11x4.7SF APC prop, Phoenix 10 ESC and E-tec 3S1P 1200mAh Li-Po pack. The ready to fly weight is 14.4 oz. He'd been flying this same setup with different cells in his Mountain Models Smooth-E, and feels

that the first flight, when the weather breaks, will go really well.



Jack Lemon shared his 9.1 oz. Fan-Tastic Models (<http://www.fan-tasticmodels.com/>) AT-6. The model features molded extruded polystyrene foam fuselage, wing panels, and stabilizers and high-impact polystyrene vacuformed parts. In Jack's version of the model, power is provided by a GWS IPSD 2 motor geared unit. The battery is a FMA high discharge 700mAh Li-Po pack. Jack designed his own retracts for this little plane. They are fantastic! What a great job of engineering!

Richard Utkan had his nearly completed Great Planes U-Can-Do 3D Flight-Flex EP ARF (<http://www.towerhobbies.com>). It is powered by the stock 280-size motor which is equipped with ball bearings and 5:1 gearbox. He'd only had a couple of hours to work on it, and it was just about finished. It turns out that this was a spur of the moment purchase when he was visiting Ryder's Hobby Shop. It seems pretty "floppy", but is supposed to be a good flyer and being made of FlightFlex Foam, it should be a good 3D trainer, as it is supposed to survive unexpectedly quick landings very well.

After the show and tell we watched a video called "Electric Flight in the 90's". Ken Myers and Jeff Hauser produced this video in 1989 using an Apple IIGS for the graphics and two video machines for

editing the footage. Footage included models that were tapped from the early-80's through 1989 by the EFO and the EMFSO. Many of the members had never seen these great flying planes before. Ken was able to add a lot of personal comments about the planes and pilots to go along with the music and narration on the video.

After the video there was some discussion about setting the cutoff point for Li-Po cells. Ken noted that in a recent review he read on the E-zone the reviewer had set the cutoff at 9v for a 3S pack and was having problems getting the system to run. Since the motor was trying to pull 36 to 41 amps from the pack, this setting proved to be too high for the voltage that can be supplied from the pack under load.

It was a great evening, and again we thank Rick for his great hospitality!



Richard and his flexible 3D

#### A note on the Video:

Anyone who is interested in a copy of the video "Electric Flight in the '90s", produced in 1989, can get a copy for \$10 by contacting Ken Myers. This is NOT a professional video, and the master has lost some of its quality over the past 16 years, but even a copy of it is still very watchable and interesting from an historical perspective. Ken doesn't have the ability

to put it on DVD, so VHS tape is the only option at this time.

#### More on Motor Selection

From Dick Corby sales@altacom.us



This is photo of Dick's Extra from his Web site. Here is the data he provided there: Modeltech ARF - Built November 2004, Powered by a AXI 2820/12 Brushless Motor swinging a 10/5E prop on 3S-1P Kokam 2000 Hi capacity Li-Poly Cells. Current is 30 Amps, Weight 47 oz.

I read the "Its a Conspiracy" article and found his observations interesting. I've been using AXI motors for a year now, and find them to be a lot less trouble than the geared motor that would give the same prop performance.

My basic philosophy is to find someone that has some data that has been tested for the given motor and go with it.

What I have found to be the best reference for the actual prop/motor combo has been at hobby-lobby.com. They have, to my knowledge, tested the product and give recommendation based on experience.

Using my Modeltech Extra 300 as an example. It is designed for a .25 Glow engine swinging a 10-inch prop. I went to Hobby Lobby and chose an AXI motor that would swing the 10 to 11 inch prop at or near the same RPM and power.

Turned out that it was the AXI 2820/12 using a Kokam 3S-1P 2000 High capacity L i-poly. Thrust to weight is 88%, current is 28 amps static, and it flies great. Actually I have had a learning curve on this plane.

There is a first Flight video at [http://www.altacom.us/Video/Extra300\\_25FirstFlite.wmv](http://www.altacom.us/Video/Extra300_25FirstFlite.wmv)

*That is exactly what I've been trying to show here in the Ampeer with several of my articles. A better site for data on AXI motors is <http://www.modelmotors.cz/index.php?id=en&nc=do> mu That is the English version of the Model Motors site. KM*

### Update on the Alfa Models Corsair Review

From Mike Southwood

[michael.southwood@ntlworld.com](mailto:michael.southwood@ntlworld.com)

Ken,

Since writing to you and giving you my Alfa Models Review of Corsair, I have changed the motor and ESC. The new motor is a Typhoon-micro 6/20, brushless. The ESC is Jeti Advance 18 - 3P. The prop is 8 X 3.8 APC Slo Fly.

Conversion was easy. I reversed the motor shaft so that the prop driver fitted on the rotating outer bell. A new ply plate was cut to screw on the motor back plate and in turn use the existing screws and holes in the bulkhead to fix the whole thing. The distance from bulkhead to prop driver came out perfect. The dummy engine had to be cut out to clear the rotating motor, which looks a bit non-scale being bright, anodised pink.

The result is about 4 grammes saved in weight, but a much smoother direct drive motor which should last, in place of the original Graupner 300 and 5:1 gearbox, which was being overrun using 3 cell LiPoly's.

Not flown yet due to lousy weather in UK, but feels very powerful, easily pulling vertically out of my hand. RPM check shows 7500, static. Balance and overall weight is exactly as before, so it should perform! I will let you know.

Mike Southwood  
Hemel Hempstead Model Flying Club  
Uk.

### New Texas Indoor Club

From Gene LaFaille [glafaille@att.net](mailto:glafaille@att.net)

Dear Sir:

Could you please add a link to our Indoor Electric club? Tyler Eflight Modelers (TEN) located in Tyler Texas. The web sight is [www.ten-spot.com](http://www.ten-spot.com)

Thanks!

*(I did, but thought that everyone should know about it via the Ampeer. KM)*

### Some Thoughts from Joe Hass

From Joe Hass

Hi Ken!

I have a few thoughts after reading the February AMPEER.

Azarr, Radical R/C, New Creations, etc. have better information on APC props than the APC web site.

As a reviewer for Radio Control Modeler (RCM) I include everything I can think of when it comes to electric. This includes voltage, current, watts, RPM and prop type, diameter and pitch. I always include the all up aircraft weight with a fully charged battery (I trust you are laughing). You are correct. It is very frustrating, especially for a newcomer, to figure out all the information necessary to make an intelligent decision on power systems and props. Most people just want a combination that works and a source for the materials. It continues to be way too complicated for the average guy to be truly successful with electrics.

2004 ended with much excitement at my house. On December 30 at 5:30PM I crashed my new, gift from my wife, going to be an RCM kit review Mini Funtana into the chimney of my house. Paula wondered what the sound was on the roof. Chris (don't you hate it when 12 year old offspring are correct) was telling me it was too dark and too windy. I got the timing wrong in a roll and WHAM! There was remarkably little damage. With the exception of the replacement prop and cow! it was repaired in 30 minutes. The Mini Funtana gets high marks from me.

Two hours later my Cermark Banchee (RCM kit review February 2005) caught fire during charging the lithium polymer pack in the airplane, in the garage. Only the smoke detector in the garage (everyone should have a smoke detector in the

garage) saved the garage, the house and the three of us.

Yes, I know. Don't charge lithium cells in the airplane. Don't charge lithium cells unattended.

I attributed the beeping noise coming from the garage to the charger indicating a completed charge. Paula opened the door from the house to the garage to see flames 6 feet high from the burning fuselage. She screamed "FIRE" but doesn't remember uttering a word. She got the garage door open in time for me to grab the part of the wing that wasn't on fire and throw the hulk onto the driveway where it burnt so hot that there are still scald marks in the concrete. I was able to save the motor, gearbox and speed control by stepping on the nose and breaking it off. Only one servo is recognizable. Three just aren't there any more. The receiver is a melted mass. A nearby transmitter was melted. Molten material spit from the battery and burnt another airplane. Boxes were burnt. It was a white-hot fire. The hardest thing was to look at Paula and try to explain how it was not going to happen again.

I am not sure what happened. The 6-ampere hour pack was a 3S4P Thunder Power unit that was three years old. It was well used. It was never balanced. It was outside in the cold and cold soaked. I know that the Astro 109 showed 3 cells at the start but I don't know if it shifted cell count during the first 3 minutes because of the cold. I know that I will never again select the maximum charge current (in this case 6 amps) during the first phase of a charge on the 109. 1/10 C is enough to get things started in the right direction during the initial charge.

Yes, now I pull the batteries and watch them during charge. Lithium cells are great but they require great care and attention to detail for proper, safe operation.

I have shared my experiences with anyone who will listen. The pictures of the burnt hulk of the Banchee have made the rounds. The pieces are quite a sight in person.

Joe Hass  
Rochester Hills, MI

*Thanks Joe for being kind enough to share your mistakes with us so we don't have to learn the hard way! It was also good that you shared this information about the Li-Po fire during Dave*

*Thacker's presentation at your club's March 9 meeting.*

*Also, I've read several of your reviews in RCM, both glow and electric, and they are excellent. They make any issue they appear in worth the price of the magazine. KM*

### **Dave Thacker on Li-Po Batteries**

By Ken Myers

Edited by Dave Thacker

Dave Thacker, of Radical RC (<http://www.radicalrc.com>), was the guest speaker at the Skymaster's meeting on March 9, 2005. He discussed the characteristics and safe handling of batteries made of Li-Po cells. The following is a summary of his main points.

Li-Po cells have created a major advance in electric flight power systems. When batteries made of Li-Po cells are used in a given model, the weight decrease of the power system is enough to bring the performance equal to or exceeding that of a glow system that would be used in a similar size and type model. This is a revolutionary breakthrough.

Dave briefly discussed the way that charging Ni-Cad/NiMH cells and charging Li-Po cells differs. He explained that a charger designed for peak charging Ni-Cad/NiMH cells looks for the peak and fall of the cell voltage while at a constant current and that a Li-Po cell charger is designed to take the cell voltage to 4.2 volts under charge and 0 amps. When the two criteria for a fully charged Li-Po cell have been met, the charge is terminated.

He also noted that it is not necessary to have a full charge to use the Li-Po cell pack.

To keep the Li-Po battery happy, it should not be flown to the cut-off voltage of the ESC. It is best to land when a very well known airframe starts to lose its performance. When a new airframe is fitted with a Li-Po pack, it is best to fly for a short time, land and check the pack voltage to see how much "time" is left in the pack, and continue this procedure until the characteristics of the new pack and airframe are learned.

#### **Li-Po cells are safe to use if:**

Charged correctly in a safe environment such as an ammo can.

They are charged outside the house or car or any other flammable environment and away from any flammable materials.

They are not discharged too deeply.

They are kept in balance.

If the user changes his/her mindset about the charging regime if he/she has been a user of NiCad or NiMH cells.

If the pack is tapped so that the individual cells can be balanced to within 0.05 resting volts.

Physically damaged packs are to be treated with great care in transport and storage until they can be discharged and safely discarded.

Dave shared his ammo can/field charging box. Dave's ammo box is used to carry his Li-Po chargers, small gel-cell charging battery, charge chords and Li-Po batteries. Dave has installed connectors in the side of his can to plug the charger(s) leads into to feed power into the ammo can. His chargers are Velcro fastened to the outside of the can. He plugs a hydra-head connector lead into the connector inputs inside the can for the charging of the Li-Po batteries. He has a 1/8" hole in the top of the can so that he can know if anything is going "wrong" on the inside while charging.

**Additional comment by Dave**, "The purpose of using an Ammo can or other small metal container is to charge the pack is in an "oxygen" limited environment. If a fire should occur, it will consume the available oxygen rapidly and be reduced to smoldering or extinguished very quickly."

Dave feels that all Li-Po battery packs should have taps so that each cell can be equalized.

**Additional comment by Dave**, "You should use these taps to check for equalization from time to time.

It is typical to perform such a balance charge once or twice a year but that it is important to check your packs for balance more frequently in order to reduce the risk of charging an "out of balance" pack. A great many of the seemingly random Li-Po fires are probably related to charging packs that were out of balance."

Dave also fielded a few general questions about electrically powered models. When asked the perennial question, "What size motor should I use?", he noted that we should think of power systems in terms of watts not cu.in. displacement.

*It was interesting to note that the Skymaster's show and tell at the end of the meeting included 5 or 6 aircraft and only one was gas or glow powered. KM*

### Gasoline Engine versus Electric Motor

By Ken Myers

For a while now I have been looking for a way to compare a gasoline model airplane engine directly with an electric system. The May 2005 *Fly RC* magazine allowed me to do just that with back-to-back articles. Andrew Coholic reviewed the Zenoah G26 Gasoline Engine starting on p40 and Russ Pribanic did an electric conversion of the Hobby Lobby Gee Bee on p46. It was almost a head to head comparison of the power systems. Here's the data:

Zenoah G26, 16x8 Zinger, 8,220 RPM

AXI 4130/20, 16x8 Master Airscrew (wood), 8,500 RPM

While the props are quite different, as well as the atmospheric conditions during the tests, they are close enough for me to say they are providing about the same power for a direct comparison.

#### Weights:

Zenoah G26 58.3 oz. w/supplied muffler

24 oz. gasoline: (0.78 oz. per fluid oz.) 18.72 oz.

Standard servo: 1.5 oz.

Total weight: 78.52 oz.

AXI 4130/20 14.43 oz.

Kokam 3200mAh 8S1P 27.23 oz.

Jeti Advance 77 ESC 1.41 oz.

Total weight: 43.07 oz.

If you want to have a better flying plane using a 16x8 prop at between 8200 and 8500 RPM, the AXI with Li-Po batteries would save a little over 35 ounces (2.2 lb.) in ready-to-fly weight!

### Li-Po Cells versus NiMH

By Ken Myers

The May 2005 issue of *Fly RC* has a review of the brushless AON T28153000 motor by Tom Hunt on p144. I found it the following quite interesting.

7-cell KAN 950 NiMH 5.7x3e 12.5 amps 91 watts 16,500 RPM  
2S1P Kokam 1500 5.7x3e 10.1 amps 64 watts 14,600 RPM  
2S2P Kokam 3000 5x73e 11.3 amps 78 watts 15,700 RPM

I was aware that a 2S Li-Po pack was much lower in voltage than a 7-cell KAN NiMH pack, but what is interesting here is the difference in the 1P and 2P Kokam packs. Paralleling the 8C 1500mAh packs (12 amp max. continuous current) lets each pack work much more efficiently, as can be seen from the numbers.

When Tom put a gearbox on this motor he came up with the following numbers.

10-cell 1950FAUP NiMH 11x7e 22 amps 227 watts 6,700 RPM  
 3S2P Kokam 3000 Li-Po 11x7e 19 amps 176 watts 6,200 RPM  
 3S2P Kokam 4000 Li-Po 11x7e 23 amps 241 watts 6,900 RPM  
 3S1P Kokam 3200 Li-Po 11x7e 24 amps 261 watts 7,000 RPM

It can be clearly seen that the Sanyo 1950mAh NiMH 10-cell pack out performs the paralleled Kokam 1500 8C cells that make up the 3S2P 3000mAh Li-Po pack. The 15C 2000mAh cells that make up the 4000mAh pack perform better than a 10-cell Sanyo NiMH pack, while the 20C cells making up the 3200mAh pack really out perform the Sanyo 10-cell pack.

Another way to see what these numbers mean is to look at the cell impedance (resistance).

KAN 950 0.0180 ohms (Motocalc)  
 Sanyo 1950FAUP 0.0060 ohms (Motocalc)  
 Kokam 1500 8C 0.0372 ohms (Electricalc)  
 Kokam 2000 15C 0.0117 ohms (Electricalc)  
 Kokam 3200 20C 0.0075 ohm (Electricalc)

If you are having trouble with these numbers, here is an example using the 10-cell Sanyo NiMH pack and Kokam 3 cell 20C pack. A 10-cell Sanyo 1950FAUP pack is said to have 12 volts (1.2v x 10 cells) at a given time near the beginning of the flight and would have an impedance of 0.06 ohms (10 cells x 0.006 ohm). At 25 amps the voltage loss would be 0.06 ohms x 25 amps = 1.5 volts. 12 - 1.5 = 10.5v to the ESC at this particular point in time. The Kokam 3200 3S1P is said to have 3.7v \* 3 = 11.1 volts somewhere near the beginning of the flight and an impedance of 0.0225 ohms (0.0075 ohms x 3 cells). At 25 amps the voltage loss would be 0.0225 ohms x 25 amps = 0.5625 volts. 11.1 - 0.5625 = 10.5375v to the ESC.

The lower the impedance, the better the performance of the cell and pack. Of course, size and weight are always a tradeoff.

It can be seen that a 10-cell high performance NiMH pack can be about equal to a 3-cell Li-Po pack, if the Li-Po cells are selected carefully and visa versa.

The one "surprise" in these numbers was that the Kokam 2S2P 4000mAh Li-Po pack didn't perform as well or better than the 3S1P pack because, in theory, the 2S2P pack should have lower impedance, because it is a parallel pack, than the 3200 3S1P.

A few other interesting things came to light in this review as well. I noted that small brushless motors all seem to give "even" Kv numbers. For example, the motor tested is said to have a Kv of 3000 RPM. The Ammo motors, which have been discussed before in the *Ampeer*, have stated Kv's of 3600, 4300 and 5100. I've also seen other advertised motors in this size that always have "even" numbers.

In the "olden" days of brushed motors, the Kv was derived from spinning the motor and reading the volts and RPM. My favorite brushed motor, the Astro Flight 035, has a Kv of 2765. The Speed 400 7.2v has a Kv of 2227. These certainly aren't "even" numbers.

I have two questions that I hope can be answered by *Ampeer* readers.

- 1.) How is the Kv of a brushless motor determined?
- 2.) Why are the little brushless motor Kv numbers always even?

Another interesting thing to note was the resistance given for this motor was 0.0825 ohms. Using the direct drive RPM of 16,500 (from the information presented earlier in this article) the voltage out equals 16,500 / 3000 = 5.5 volts. At 91 watts and 12.5 amps that means that the voltage into the ESC is about 91 / 12.5 = 7.28 volts. The difference of volts in to volts out is 1.78 volts. 1.78 volts / 12.5 amps = 0.1424 ohms. 0.1424 - 0.0825 = 0.0599 ohms. The ESC that Tom used was not stated in the article, but a Castle Creation Phoenix 25 has an on resistance of 0.0065 Ohms. 0.0599 - 0.0065 = 0.0534 ohms unaccounted for. Decent wire would not account for this difference. Can someone tell me what can account for the "missing" resistance and resultant voltage drop?

When reading such an excellent review as Tom's, a lot of information can be gained, besides what the article was obviously about. I wish there were more articles of equal quality to Tom's!

### **New Ryan Aircraft Zero**

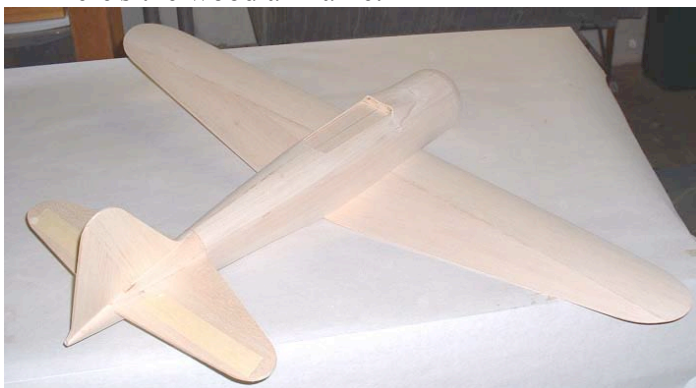
From Jim Ryan jimryan@fuse.net

URL: <http://home.fuse.net/ryan/>

*With a Hellcat, Wildcat and Corsair in his stable of great Speed 400 WWII designs, Jim Ryan has decided to add an adversary, the Zero. Here is a little preview of his upcoming Zero. KM*

I'm burning the midnight oil to try and finish my project. On the 20<sup>th</sup> (March 20) I started cutting wood on an A6M2 Zero, so I've had to work every spare moment on it. It's now glassed and has the first coat of primer, so I should be able to make it (done by the Toledo show) if there are no major hiccups.

Here's the wood airframe:



I'm enclosing a photo of my newly completed A6M2 Zero, which will be featured as a construction article in an upcoming issue of *Model Airplane News*. The Zero is similar in size and construction to my other Speed 400-size Warbirds: 32" span, 162 SQ IN of wing area and AUW of 18 ounces. The airframe is typical balsa/ply construction, and the wing is foam sheeted with 1/32 balsa. Power is a stock 6V Speed 400 motor on 8 X KAN1050 NiMH cells.

The prototype is finished in the colors of Lt Cdr Shigeru Itaya, who lead the first wave fighter wing in the attack on Pearl Harbor. The covering is .56-ounce

fiberglass cloth and finishing epoxy, and I painted the model with an airbrush using Model Master paints. Construction took place over a feverish 11-day period right before the Toledo Expo, and it took an all-nighter to get it completed on time.

With its clean airframe the Zero is surprisingly fast on the stock Speed 400 motor, and it does all basic aerobatics (loops, rolls, sustained inverted, etc). The high aspect ratio wing also gives it a low stall speed, so it lands very slowly. After a few more test flights with the stock motor, I plan to try it out with a small brushless system.

The construction article and plans will appear in MAN in the next few months, and I plan to release a complete laser cut kit by early 2006.

Thanks for a great newsletter, Ken.

Jim

*If you are looking for a Speed 400 Warbird like the Hellcat, Wildcat, Corsair, P-38, Bearcat, P-47 or Reno Racers like the Rare Bear or Super Corsair, be sure to check out Jim's site at <http://home.fuse.net/ryan/>. These planes really do fly excellently on an inexpensive Speed 400 6v motor and eight cells. They are not Park Flyers! Be sure you have a decent size field to fly them. KM*

### **Toledo 2005 & Keith Shaw's Czechmate**

By Ken Myers

The Toledo RC Expo proved to be very interesting this year. I was able to catch up with a lot of flying friends from around the country and have very good chats.

The best part, for me, was to see Keith Shaw's completed Czechmate Reno Racer. Keith was inspired to model this plane after visiting the Reno Races last fall. When Keith had told me that he was modeling this plane, I had no idea what the Czechmate was, so I did a bit of research on the Internet and found it was based on the Yak-11/Let C.11. I was not familiar with the Jak-11, but I immediately took a liking to its looks. Since it hasn't been modeled very often, I decided that I make my own Yak-11/C.11/Jak-11.

I was having a terrible time with getting the landing gear to retract correctly, but seeing how Keith did it on the Czechmate was worth the trip to Toledo!





### What is Czechmate:

A Russian Yak-11 2-seat trainer (600 hp)  
 Made in Czechoslovakia (ergo the name)  
 Acquired from the Egyptian Air Force  
 Modified to take an R-2800 engine from a Corsair,  
 boosted to almost 3000 hp  
 Gearbox from a North American Savage  
 Prop Hub from a Bearcat  
 Cut-down prop blades from a Skyraider  
 Spinner from a Douglas A-26 Invader  
 Cowl from a French Breguet 763 airliner!  
 Metal-skinned fuselage and enlarged fin  
 Canopy from a Formula One Racer



### Model Specifications: 1:6 scale

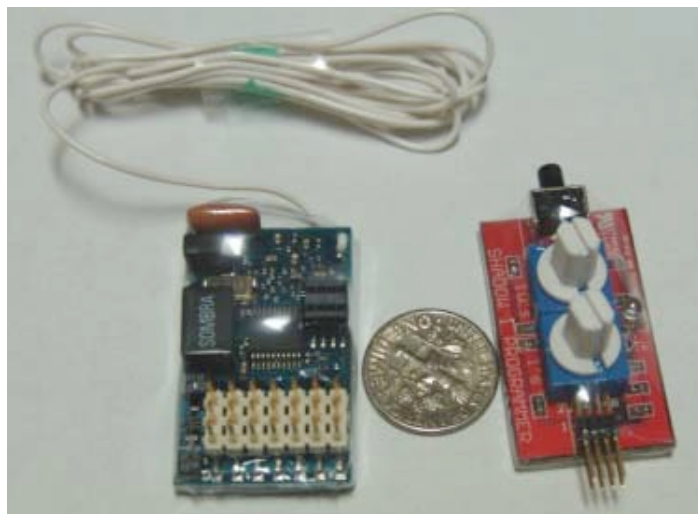
Span: 61.6 in.  
 Area: 700 sq.in.  
 Weight: 8 lb.  
 Wing loading: 26 oz./sq.ft.  
 Motor: Astro Flight 60 Brushless Prototype  
 ESC: Castle Creations Phoenix 80HV  
 Battery: Kokam 10S1P 3200mAh Li-Po  
 Prop: 15.5x12 4-blade  
 Input power: Approximately 2400 watts  
 Watts per pound: Approximately 300!

Setting right next to Keith Czechmate was Jim Young's new Hughes H-1 Racer. Here is a photo, and more details will follow.



I needed/wanted a new receiver, so that was my only purchase this year. I chose the Shadow 3 from Sombra Labs Inc. (<http://www.sombralabs.com>). It is the world's smallest and lightest 7-channel full-range receiver. It is a crystal-less receiver and can be tuned to any 72Mhz or 75Mhz frequency using the Shadow programmer. There are numerous other features available, but it was the good "words" I'd heard about this receiver that made me choose it. I purchased it from Kennedy Composites at the show. Gordy Sthal was working the booth, and I was pleased to hear that he has been testing this receiver and is very happy with it. For those of you who've been in the eflight end of the hobby, you'll know that Gordy is a great glider pilot and famous in the eflight arena for "Gordy Cells."

The photo shows the Shadow 3, programmer and USA dime for size. The receiver only weighs 8g with the antenna!



**Upcoming E-events  
2005**

**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)

**May 21** MISS Beginner Day, Glider and Electric training and demos, kit demos and Delta Dart construction, as well as rubber & electric demos. Contact Tom Blaszak 313-248-1915 MISS site at [http://hometown.aol.com/nlsorensen/michigan\\_international\\_soaring\\_s.htm](http://hometown.aol.com/nlsorensen/michigan_international_soaring_s.htm)

**June 4 & 5** "Keith Shaw Birthday Party Electric Fun Fly", Balsa Butcher's Flying site in Coldwater Michigan ? Contest Director: Dave Grife - E-mail: [grifesd@yahoo.com](mailto:grifesd@yahoo.com) or Phone: 517.279.8445 ? Please e-mail or call with any questions. The Flying Field will be open Friday, June 3 for early arrivals

**June 11 & 12** River Valley Flyers Electric Fun Fly, Wisconsin Rapids, WI, More info later at our club web site [www.RiverValleyFlyers.com](http://www.RiverValleyFlyers.com), Contact: Chuck Benner [cjbenner@tznet.com](mailto:cjbenner@tznet.com)

**June 24-25-26** MARCEE 2005 Electric Fly, 3M Club R/C Flyers' Field, St. Paul, Minnesota, Contact Steven Mundt [mundt@mninter.net](mailto:mundt@mninter.net) Web site: [www.marcee.org](http://www.marcee.org) See [marcee.org](http://marcee.org) for details.

**July 9 & 10** TENTATIVE! Mid-America Fun Flies 2005, Northville Twp., MI for information contact Ken Myers via email at [kmyersefo@aol.com](mailto: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 2<sup>nd</sup> Annual E Fun Fly, info at: [www.foxcoins.com/skyhawks/funfly/](http://www.foxcoins.com/skyhawks/funfly/), contact Plenny Bates, 2505 White Eagle Trail SE, Cedar Rapids IA 52403-1547, 319-362-2969

Please get event info to Ken Myers ASAP for 2005



The Ampeer/Ken Myers

5256 Wildcat

Crosswell, MI 48422

<http://members.aol.com/kmyersefo>

**The Next Flying Meeting:**

**Date:** Saturday, May 7 **Time:** 10:00 a.m.

**Place:** Midwest RC Society 5 Mi. Rd. Flying Field  
Northville, Twp.