the Ampeer

July The EFO Officers 2011

President:
Ken Myers
1911 Bradshaw Ct.
Commerce Twp, MI 48390
Phone: 248.669.8124

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

Secretary/Treasurer:
Rick Sawicki
5089 Ledgewood Ct. W.
Commerce Twp., MI 48382
Phone: 248.685.7056

Board of Director:
David Stacer
16575 Brookland Blvd.
Northville, MI 48167
Phone: 248.924.2324

Board of Director:
Jack Lemon
8908 Sandy Ridge Dr.
White Lake, MI 48386
Phone: 248.698.4683

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

Mailed Ampeer subscriptions are no longer available

The Next Meeting:
Date: July 9 & 10 **Time:** 8:30 a.m. Mid-Am Meet
Place: Midwest RC Society 7 Mile Rd. Flying Field

What's In This Issue:

Global Hobbies Stik-E Kit

From Nick Bisonni via email

Hey Ken,

Continued thanks for your work on the *Ampeer*, which I enjoy receiving every month.

Many years ago I flew a Global kit called the "Stik-E" which was a 48-inch wingspan "stick" type electric flier. I ran it on an AstroFlight 035 with 7 NiCad cells. I had a lot of fun flying it and learning basic aerobatic maneuvers until I lost a servo and crashed the plane beyond repair.

I liked it so much I bought another kit but never built it. I recently dusted off the box and got to work with an "updated" power-system in mind. All up weight is expected to be in the 36 to 40 oz. range with a Turnigy Nano-Tech 2200 mAh 3S Li-Poly and a Heads Up RC 3530-14, 1400Kv (RPM/v) brushless motor (3530-1400, 74g). This motor is specified as producing 35 oz. thrust at 22 amps with an APC 8x4E on a 3S LiPo. I'm anticipating good performance.

The prop diameter limitation is 8 in. (with 1-1/2 in. wheels) and I'm hoping the 3530-14 motor will perform well.

I'm conservatively estimating an all-up weight of approximately 40 oz. but expect to come in under this.

Stay well,
Nick Bisonni

The Feather Merchant and **Using Drive Calculator**
From Art Lane via email

Ken,

The Feather Merchant is an old plane from the 1936 era. The plane was built by a close friend of mine and he left it to me in his will when he passed away 10 years ago. It was built about 20 years ago and I flew it at several of our SAM events here (*in Canada KM*) and across the border in Michigan. It was, and still is, a majestic airplane to fly. Perfect for thermal hunting.

The plans came from the old RCM magazine, but you could probably find it on the SAM Web site. Wing cord is 8". For the wing area we'll go with the 790 as I found this on the old plan.

This is an all balsa and Monokote covered aircraft. Actually, I was surprised at the weight when built. I figured it would be heavier, but at only 4.5 lb. the Hurricane 45 ignition motor really hauled it up on an 11x7 OT prop.

A friend gave me the Thrust motor that I'm using. It's an Australian motor, and so far it has done a great job for me in the Feather Merchant.

I originally had a 12x6 prop on it but the motor and battery got **very hot**, so I cut the prop down to a 10x6, as recommended by Thrust and this seems to work not to badly for the type of flying I do with it.

Ground clearance from the prop shaft center to the ground is 10.5"

At first I had a Super Tigre .10 outrunner (35??-1250, 69g) on it but it just didn't seem to have the oomph I wanted, so, with a little checking around, I came across the PA Thrust 20 outrunner (37??-1030, 71g). I had pulled up the Web site for them and that's were I got the info on prop, ESC, etc.

As for weight, you can see from the pictures how well this aircraft was built. Bruno was a master builder. It wasn't heavy considering, at the time, it was for the ignition motors, as for electric now, I think it still is well within range.

I got the calc program downloaded and the manual. (*Drive Calculator http://www.drivecalc.de KM*) I have read the manual twice through and I am still confused. That's what happens when you hit 76. Anyway, can you tell me, in plain Electronics English; how I get started in entering what info I have in the different calculations?

It looks like a good program, one I should have installed years ago.

I tried and tried to figure out stuff on the calculator for my antique Feather Merchant, a SAM plane.

I was wondering if you could do some calculations for me on this plane.
Wingspan - 79.25"
Fuse length - 56.75"
Weight - 4.5 lb.
Motor is the PA Thrust 20
http://www.thrustmotors.com/thrust20.pdf (37??-1030, 71g), peak watts in: 330, peak current 27 for 15 seconds

I have 2200mAh Li-Polys that are 30C and a 1500mAh I use is 15C.

For the prop, I cut a 12-inch down to 10.5 as this is what they (*Precision Aerobatics KM*) recommend (10.5x6) (*Actually the data sheet for this motor recommends an APC 10x5E KM*)
Rx - RS410 four channel on 72mhz
Servos - 2 JR 527's
ESC – Castle Creations' Thunderbird 36 Amp

I want to know if what they recommend for a prop is right, or do I get a different size?

The flying I do with it now is only sport flying, enjoying the thermals on a warm day, if we ever get any!

Hope you can help me. I'm at a complete loss on this calculator.

Thanks,
Art

Hi Art,

I noticed that you said that when you originally used a 12x6 prop "the motor and battery got **very hot".** You did not note what your amp draw was. If you do not have a power meter, you really need one. See my comments regarding power meters in the article "Electric Power Basics" at http://homepage.mac.com/kmyersefo/e-basics/e-basics.htm#RFP.

A motor/battery/prop calculator helps to get you into the 'ballpark', but a power meter must be used to verify the prediction.

Both of the motors that you've used are approximately the same weight, which indicates they have a similar power maximum, but the Thrust 20 has a significantly lower Kv. Generally, the lower Kv of the Thrust 20 would indicate that with the same prop, battery and ESC combination, the Thrust 20 would swing the same prop at a lower RPM and amp draw than the Super Tigre .10. Something more important comes into play here, efficiency.

To see this effect using Drive Calculator, for the battery select the BlackLine 2200-35C from the Power supply dropdown menu and click the Hold box to the right of that menu. The battery really doesn't matter for this example and this is the first 2200mAh battery on the list. Next select the 12x6 APC E prop from the Propeller dropdown menu and click the Hold box to the right of it. You didn't use an APC, but this will suit for the example and demonstration.

Select the PA Thrust 20 (Precision Aerobatics) from the dropdown Motor menu. In the area on the right side of the program window and just above the Motor calculation reliability area you should see this, or something very similar depending on the numbers you've input into the Altitude and Temperature boxes. For this exercise mine are set to Altitude 0 m and Temperature 15 ^{0}C.

☐ Match motor	Altitude 0 m	Temperature 15 °C
Prop speed	7057 rpm	Current 27.2 A
Static thrust	1420 g	Power in 285.9 W
Vopt	50 km/h	Power out 180.1 W
Thrust efficiency	5.0 g/W	Drive efficiency 63.0%

Next, without changing anything else, select the Super Tigre .10 from the Motor dropdown menu and you will see this.

☐ Match motor	Altitude 0 m	Temperature 15 °C
Prop speed	6832 rpm	Current 29.6 A
Static thrust	1323 g	Power in 309.8 W
Vopt	49 km/h	Power out 161.7 W
Thrust efficiency	4.3 g/W	Drive efficiency 52.2%

There is not the expected RPM drop due to the lower Kv of the Thrust 20, but there was an amp draw drop. Almost half of the energy going into the ESC and motor of the Super Tigre .10 is being turned into wasted heat energy. Even though the Thrust 20 shows less watts in on a power meter, it has about 20 more watts **out**. The increased power of the Thrust 20 can be seen by the higher RPM, which is yielding greater Static thrust for the APC 12x6E prop.

According to the Precision Aerobatics' documentation for this motor, the motor should be okay run in burst mode, like your style of flying with this plane, when using the APC 12x6E. It is 'pressing' the motor 'hard' with a bit over 100 watts of wasted heat energy. How long can you hold onto a 100 watt light bulb? Is it 'HOT'? You bet!

With about a 28 amp draw, when using the Thrust 20 and APC 12x6E, the 36-amp ESC is well within 'safe' limits. The 30C 2200mAh Li-Poly has a maximum amp rating by the supplier of 66 amps, so there is no problem with it. The 15C 1500mAh battery is rated to 22.5 amps by its supplier. That could be a problem for that pack when used with the APC 12x6E and the PA Thrust 20.

There is no way to estimate what your cut down GWS 10.5x6 prop might be doing using the data already in the program. You need to use a power meter to measure the amp draw with that prop.

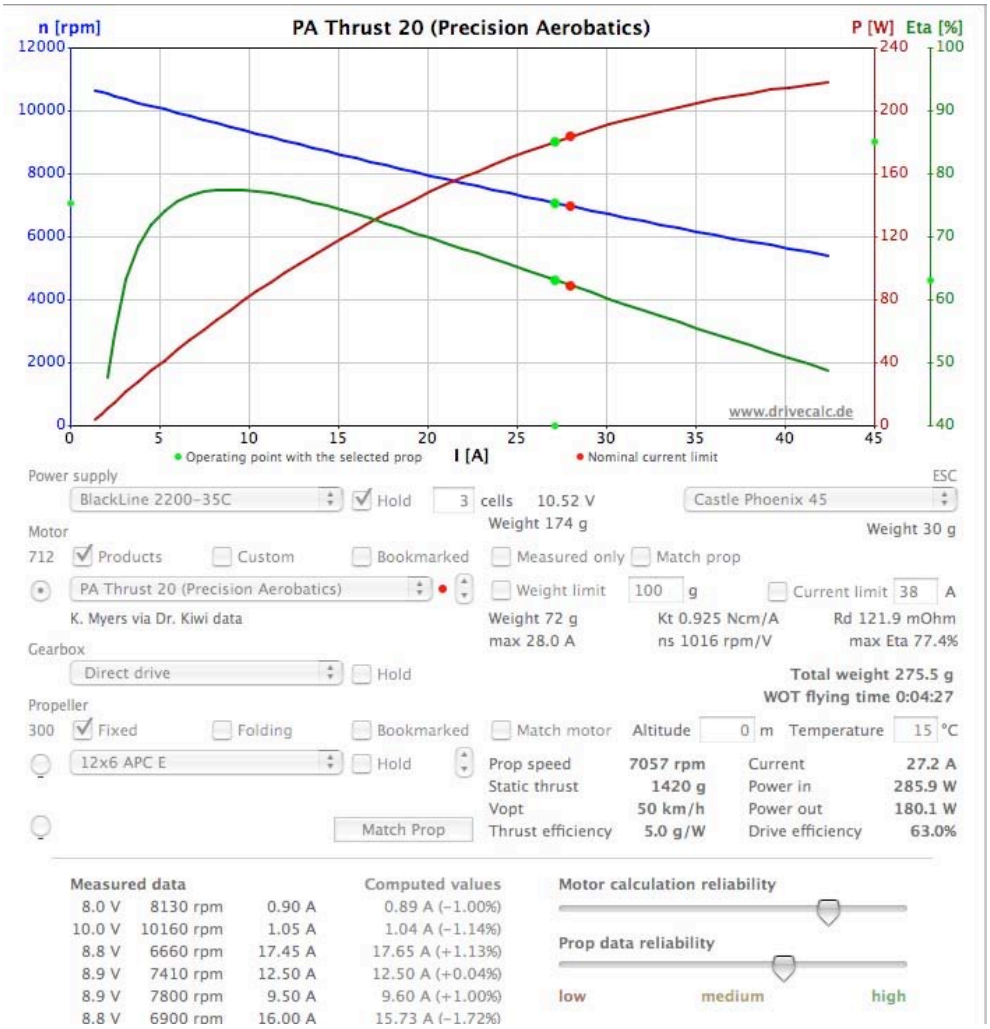
If you want to use both packs interchangeably, switch the prop in DC to an APC 11x5.5E and you'll see that the predicted amp draw is about 22.4 amps with the BlackLine pack used as the example, but if you switch to any of the 1500mAh batteries in the Power supply dropdown menu, the amps drop to about 20 or 21. This indicates that you might want to try an APC 11x5.5E prop for pack interchangeability, as long as it does NOT highly impact the performance you desire. **Be sure to use a power meter and verify the amp draw with both packs and especially the 1500mAh pack.**

I hope this helps some and shows you how a program like this can shed some light on what is happening with various power systems. It is very important to keep in mind that, at best, these are only some relatively close predictions and that the actual

'numbers' will vary somewhat for many reasons. Did I mention to **always use a power meter to verify your power system set up?** ;-)

Drive Calculator Can 'Show' Even More

Drive Calculator (DC) is used to demonstrate what was going on. DC includes the data for the PA Thrust 20. If it did not have the data in its database, you could use a motor of similar weight and Kv. The data for the Thrust 20 was entered using information from a pretty reliable source, Dr. Kiwi. The selections used for this example:
Power Supply: BlackLine 2200-35C
Motor: PA Thrust 20 (Precision Aerobatics)
Propeller: Fixed, 12x6 APC E



The lower right of the window indicates that the motor calculation and prop reliability are pretty good by the placement of the sliders along the scales for this example.

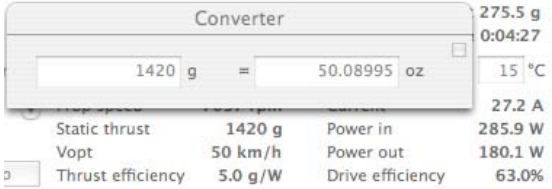
The motor's operating point current is a red dot on each of the three lines in the graph.

The RPM, related to the current, is shown as a blue line with the RPM scale noted along the left of the graph. A green dot also appears along the RPM scale indicating an RPM about half way between 6000 and 8000. The data above the Motor calculation reliability area confirms the predicted RPM as 7057. The **watts out** P [W], (very important to note that the watts of this program are **WATTS OUT**) related to the current, is shown as a red line with the P [W] scale noted along the right side of the graph closest to the graph. A green dot also appears along the P [W] scale indicating a P [W] (**watts out**) about half way between 160 and 200. The data above the Motor calculation reliability area confirms the predicted P [W] as 180.1. Remember, that is **watts out!**

The drive efficiency Eta [%], related to the current, is shown as a green line with the Eta [%] scale noted along the right of the graph but to the right of the P [W] scale. A green dot also appears along the Eta [%] scale indicating drive efficiency between 60 and 70, but much, much closer to 60. The data above the Motor calculation reliability area confirms the predicted Eta [%] as 63.0%.

The text above the Motor calculation area contains the 'valuable' information.
Prop Speed can be used to calculate the pitch speed. In this case 7057 rpm * 6 pitch = 42,342 / 1056 (a constant) = 40 mph, which is good for this type of plane and its mission.

Static thrust is noted as 1420 g. Right click on the 1420 g and it will show a conversion to ounces. In this case 50.08995 oz.



Vopt and Thrust efficiency may or may not be useful to you. Right clicking on them will also open the converter to ounces.

Current: 27.2 A shows, that according to this program, the current is above what is recommended on the PA instruction file, but not above the max set in the program of 28.0A.

Power in: 289.5 W is the approximate voltage shown next to the battery choice 10.52 V * 27.2 A. This is getting pretty near the PA recommended watts in for this motor.

Power out: 180.1 is calculated by the electrical and mechanical losses that the program predicts for this motor.

Drive efficiency: 63.0% is basically the predicted Power out divided the predicted Power in at the ESC. 63% is pretty typical for these small outrunners at relatively high amp draws.

Hopefully, you can see why when using a 12x6, your motor was running 'hot'.

Unfortunately, there is no way to predict how your cut down 12x6 to a 10.5x6 prop might be affecting the amp draw using DC. Measuring the amp draw with the cut down prop, would allow the selection of a similarly loaded prop.

There is a 10.5x6 prop in DC. It is the 10.5x6 Aeronaut E-prop. The Aeronaut E-props are pretty good and pretty efficient and you might want to get hold of one to fly it and see if you like the way it flies the plane. It will draw less amps than your cut down 10.5x6 and probably be more efficient.

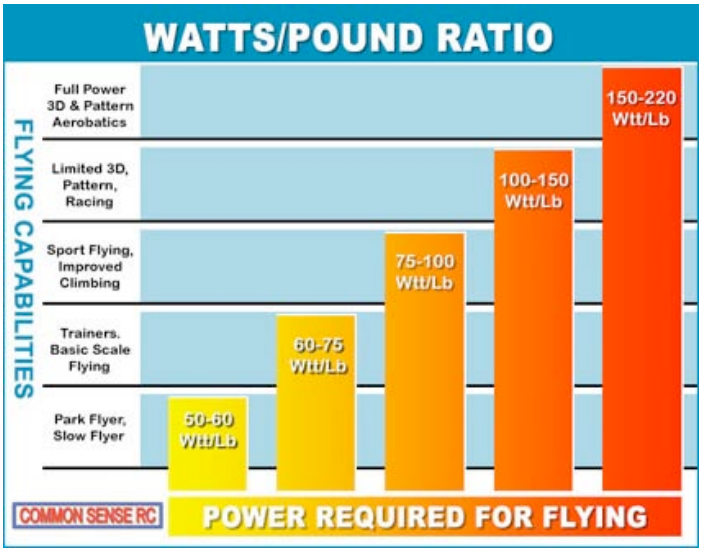
Change only the prop in DC to the 10.5x6 Aeronaut E-prop in DC and the results become;
Prop Speed: 7876 – pitch speed (you can figure that now) about 45 mph, still okay
Current: 21.4 amps
Power in: 228.1 W
Power out: 156.7 W
Drive efficiency: 68.7%

What you are using is probably pretty close to the 'best' you can get with your current power system.

Drive Calculator may also be used to select or match a power system to an airframe and its mission, but you do need to know a few things about airframe and mission.

You described the mission of your old timer perfectly.

Some things you need to know to select the power system are the wing cube loading (WCL) for the mission and the power requirements. Old-timers generally have a WCL of between 5 oz./cu.ft. and 7 oz./cu.ft. Your Feather Merchant with 790 sq.in. of wing area and a weight of 72 oz. has a WCL of 5.6 oz./cu.ft. using the calculator found at http://www.ef-uk.net/data/wcl.htm.

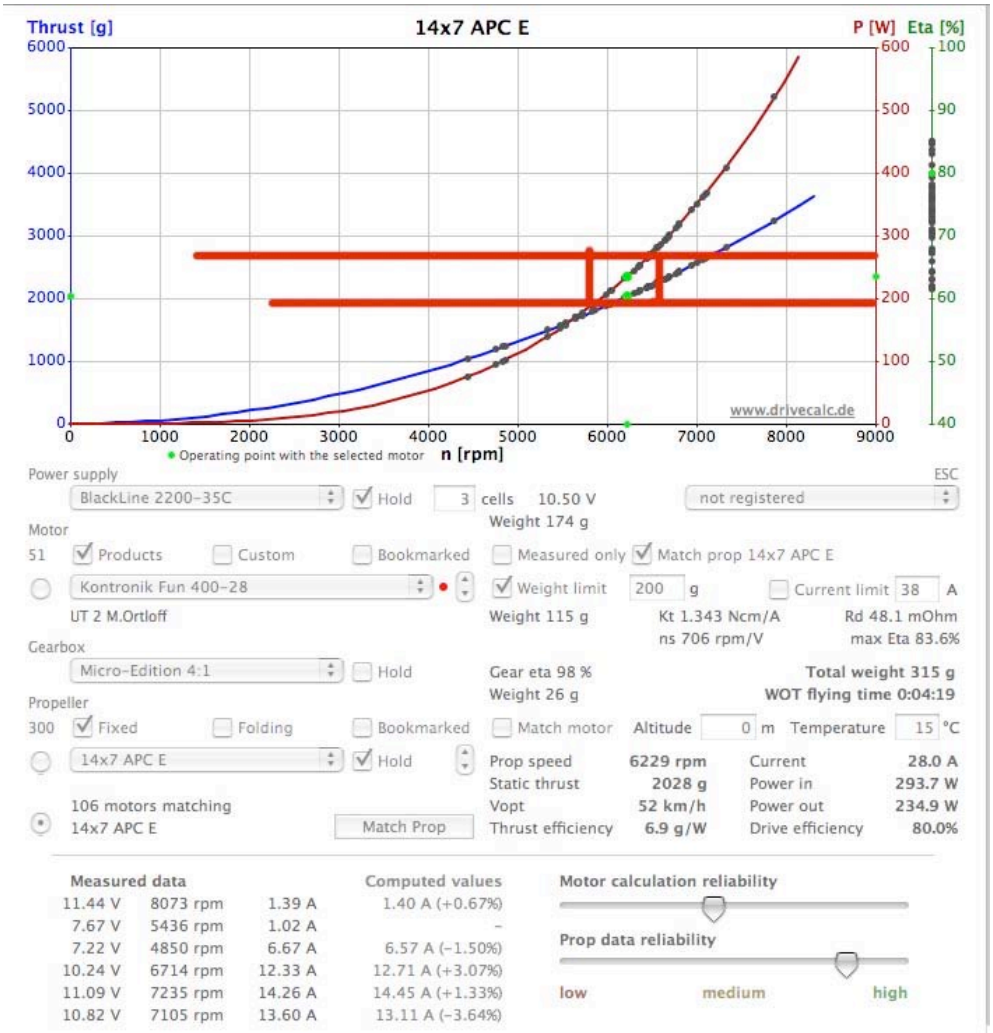


The power chart at http://homepage.mac.com/kmyersefo/e-basics/Power_chart.jpg does not show old-timers, but they really need no more power for their mission than park flyers or slow flyers. That is 50 watts in to 60 watts in per pound of motor weight. At 60 watts in * 4.5 lb. that would be 270 watts in. For ease in talking numbers, 300 watts in is good. Your power system choice was good for the watts in for this plane's mission.

You originally tried a 12x6 prop, which is a good choice for an old-timer. You noted that you have a shaft to ground clearance of 10.5 inches. Subtract 1.5" for prop clearance from the ground and that indicates that the largest prop diameter is equal to 9" times 2 or 18". You really aren't using the most efficient prop for this application.

As a general rule, larger diameter props are more efficient that smaller diameter props. An 18x9 (same pitch to diameter ratio - 50% - as the 12x6) is expensive, hard to come by, and not really needed on this model. While any prop with the same pitch to diameter ratio could be used (17x8.5, 16x8, 15x7.5, etc.), an APC 14x7E could be a good choice though. It is a pretty common prop and not too expensive and

it would give a big boost in prop efficiency over the 10.5x6 you are using now.



When selecting motors using a given prop and battery, DC will present a very large number of possible motors. There are so many that it is almost overwhelming. To limit the number of motors, if the input watts can be guesstimated, in this case 300, divide that by 1.5. You can call the 1.5 a constant if you like, although it is based on something. To limit DC to motors weighing 300 watts in / 1.5 or 200g, check the box Weight limit next to the motor choice box and type 200 in the box to the right of the check box.

To try a 14x7 APC E select it from the Propeller drop down menu and then click the Match Prop button above the Measured Data area. DC will present a large number of possible motors but restricted by the motor weight of 200g in this instance. Note that your DC program will not look exactly the same as mine after the Match Prop button has been selected. I have changed my DC motor database to only motors that are easy for Americans and Canadians to acquire. That doesn't really matter for this exercise.

Keep in mind that the P [W] noted on the graph is **watts out**. With about 300 watts in needed for the mission, 75% efficiency (just a good area to start with) is 225 **watts out.** I have boxed in with red lines on the DC screen capture the area to look at for possible motors. They fall between 200 P [W] and about 250 P [W].

Click on the black dots on the red line on the graph between 200 and 250ish on the P [W] scale. Note any motors that show up in the Motor selection area that fall between 200 and 250. To limit the motor choices to outrunners do not include those with gearboxes, if you like. These are the outrunners I found. You may find more.

AXI 2826/12 181g, 300.0 watts in, 28.6 amps, 71% eff.

Kontronik Kora 15-16 152g, 302.5 watts in, 28.8 amps, 76.5% eff.

The Kontronik Kora 15-16 looks like a good candidate with the lightest weight and best efficiency. The $199.00 price might be a deterrent to you. http://www.icare-rc.com/kontronik.htm

If it is, click the radio button next to the 14x7 APC E drop down selection box. Click on the check box above the 200 g motor weight limiter box to deselect it.

Now select a 13x6.5 APC E prop from the drop down menu. Click the Match Prop button. The weight limit will still be there. Again look in the P [W] area between 200 and 250ish. I found the following outrunners.

AXI 2826/12 178g, 281.9 watts in, 26.8 amps, 79.7% eff.

Scorpion SII-3014-830 15-deg 129g, 31.9 amps, 70.2% eff.

Kontronik Kora 15-14 155g, 297.2 watts in, 79.5% eff.

The motor of choice here, would be the Kora 15-14, which is the same price as the –16 version.

To check out a 12x6 prop, click the radio button next to the 13x6.5 APC E drop down selection box.

Click on the check box above the 200 g motor weight limiter box to deselect it. Select a 12x6 APC E prop from the drop down menu. Click the Match Prop button. The weight limit will still be in force. Again look in the P [W] area between 200 and 250ish. I found the following outrunners.

EMAX BL2815-09 112g, 276.8 watts in, 26.3 amps, 78.1% eff.
EMP C4240/10 890Kv 140g, 274.2 watts in, 26.0 amps, 76.3% eff.
Torque 2814T-820 143g, 273.2 watts in, 25.9 amps, 75.2% eff.
EMAX BL2820-07 145g, 323 watts in, 30.9 amps, 73.1% eff.
E-flite Power 15 BL Horizon Hobby 152g, 342.2 watts in, 32.9 amps, 80.0% eff.
Turnigy TR 35-48-B 900kv 161g, 308.2 watts in, 29.4 amps, 68.9% eff.
Turnigy TR 35-48-B 900kv #2 170g, 291.0 watts in, 27.7 amps, 77.3% eff.
Hacker A30-10XL 177g, 313.7 watts in, 30.0 amps, 82.1% eff.
E-flite Power 25 BL (5-deg timing) 190g, 305.6 watts in, 29.2 amps, 76% eff.

At first the EMAX BL2815-09 at 112g looks like it might be a good choice, but Motor calculation reliability is low.

The EMP C4240/10 890Kv is basically the same motor as the Turnigy TR 42-40B 900kv at http://www.hobbyking.com/hobbyking/store/uh_viewItem.asp?idProduct=4912. The manufacture's page is here. http://www.xingyaohua.com/web/en/products_display.asp?pid=19&id=13&proid=78

The Torque 2814T-829 also looks good as far as the numbers go. It is more money than the Turnigy, but might be worth it not to deal with Hobby King.

The Hacker A30-10XL and E-flite Power 25 would also be good choices for use with an APC 12x6E prop and allow some of the nose weight that you added to be removed.

More Questions and Comments

AL = Art Lane
KM = Ken Myers

AL: Well, good results now. I ran the test again after getting the 11x5.5E prop and here's what I found Li-Poly at start 12.04V (Didn't put it on charge after Fridays tests)
Watts - 145
Amps - 15
The pull seemed to be better than what I got with the cut down 12x8 (to 10.5).

Motor/ESC/Li-Poly all were still cool.

The calc gave me a result of 67.6% efficiency with the new APC prop.

I think I have the hang of the program, and will use this and my Wattmeter from now on, no more guessing.

KM: Yes, the efficiency of about 67.6% is about as good as you can get with a good size prop diameter on the Thrust 20.

PA is known for its 3D type planes. Yours isn't. They recommend an 1800mAh battery to keep the weight down. You don't need to worry about that with all the wing area you have on the Feather Merchant!

One capacity is not inherently better than another, although as the capacity, read that weight, of the battery increases, its ability to maintain a higher voltage and amperage under load increases. Also higher C rated packs, which are heavier, do that as well.

AL: I tested, again, my FM setup. The RPM of the present setup, APC 11x5.5E, on the Thrust 20 was higher than the calc program gave. I read 7200 RPM and again, got a little alarmed.

KM: Calculator programs aren't perfect. They will give results close enough, but not 100% accurate. You'll get a bit better results by setting your altitude and the temperature in Drive Calculator. The boxes to enter them are down about 2/3 of the way on the right side of the program window. 7200 RPM yields a pitch speed of 37.5 mph. Good for this type of plane.

Drive Calculator is a useful program for doing 'what ifs'. At the price, FREE, it should be on everyone's computer and it runs on all the popular operating systems.

Keith Shaw Maidens the Yak UT-1

From Keith Shaw via email

Keith Shaw maidened his Toledo winning Yak UT-1 at the Midwest field. Here's what he had to say about it.

"**May 21st**: Just returned from a successful test flight with the Yak UT-1 that I built for Toledo. Actually it has been a long time coming as I started it three years ago, but for the two previous Toledo Shows, emergencies always came up to prevent me from finishing it.

The plane has been ready to go for almost a month, but the weather just hasn't co-operated. Today was no different with 90-degree crosswinds, but the bright sunshine, mild temperatures, and a feeling of optimism lead me to the field. Did all the final range and CG checks, and magically the wind decided to blow parallel to the runway. Takeoff, flight, and landing went well in this nice breeze, and about 10 minutes later the wind shifted crosswind once again.

Other than two clicks of up trim, the plane tracked well, and after a couple of passes, I basically did most of the Zlin/Stomo aerobatic routine. It handles more like the Bearcat, and cannot do the sharp cornered square loops like the Stomo, but otherwise it is a vice-less, well-mannered gentleman.

I look forward to many more flights with my new friend. The Russian pilot was almost ready for the flight but needs a few more painting details.

We look forward to seeing you at Dave's meet in Coldwater. I already have my birthday present, a bouncing baby yak!

Keith"

Mid-America Electric Flies 2011

At the 7 Mile Road MRCS Field

AMA Sanctioned
Saturday, July 9 & Sunday, July 10, 2011
Hosted by the:
Ann Arbor Falcons and **Electric Flyers Only**
Flying Site Provided by the:
Midwest R/C Society
Your Contest Directors are:
Ken Myers phone (248) 669-8124 or KMyersEFO@mac.com – http://homepage.mac.com/kmyersefo/
Keith Shaw (734) 973-6309
Flying both days is at the Midwest R/C Society Flying Field - 7 Mile Rd., Salem Twp., MI
Registration: 9 A.M. both days
Flying from 10 A.M. to 5 P.M. Sat. & 10 A.M. to 3 P.M. Sunday

Channels 00 through 60, the six 27Mhz frequencies, the eight 53MHz frequencies and 2.4Ghz, will be in use. Flying on five 49 MHz frequencies may be accommodated on request - Narrowband receivers are recommended for flying on Channels 00 - 60 - Very Wideband 27, 49, & 53 MHz, receivers may be accommodated on request – 2.4Ghz controlled at impound

Pilot Entry Fee $15 a day or $25 both days - - - -
Parking Donation Requested from Spectators

Saturday's Events

Best Scale
Most Beautiful
Best Ducted Fan
Best Sport Plane
CD's Choice

Sunday's Events

Best Scale
Most Beautiful
Best Mini-Electric
Best Multi-motor
CD's Choice

Planes Must Fly To Be Considered for Any Award

Open Flying Possible on Friday
Night Flying Possible, Weather Permitting, Friday & Saturday Nights
Refreshments will be available at the field both days.

Potluck picnic at the field on Saturday evening.

Come and join us for two days of fun and relaxed electric flying.

Come, Look, Listen, Learn - Fly Electric - Fly the Future!
Saturday's & Sunday's Awards:
Plaques for 1st in each category

Merchandise drawing for ALL entrants
Possible Places to Stay
Please note that this list is not updated and some phone numbers may have been changed.

To locate the Midwest R/C Society 7 Mile Rd. flying field, site of the 2011 Mid -America Electric Flies, look near top left corner, where the star marks the spot, near Seven Mile Road and Currie Rd. The field entrance is on the north side of Seven Mile Road about 1.6 Miles west of Currie Rd.

Address: 7419 Seven Mile Road, Salem Twp, MI 48167-9126 - numbers on the fence

Mid-America Flies Hotel List – 2011 Please call the hotels for current rates

Photo of Entrance to MRCS Site off 7 Mile Rd.

Novi Hilton
21111 Haggerty Rd.
236 rooms
800-445-8667
248-349-4000

Sheraton Oaks
27000 Sheraton Dr.
206 rooms
248-348-5000

Travelodge Detroit
21100 Haggerty Rd.
124 rooms
800-578-7878

Detroit Marriott Livonia
17100 Laurel Park Dr. N.
227 rooms
800-228-9290

Hampton Inn Northville
20600 Haggerty Rd.
125 rooms
800-426-7866
313-462-1119

Wyndham Garden Hotel
42100 Crescent Blvd.
152 rooms
800-222-4200
248-344-8800

Holiday Inn Livonia
17123 Laurel Park Dr. N.
225 rooms
800-465-4329
313-464-1300

Hotel Baronette
27790 Novi Rd.
149 rooms
248-349-7800

Days Inn Livonia
36655 Plymouth Rd.
72 rooms
800-325-2525
313-427-1300

Comfort Inn Livonia
29235 Buckingham Ave.
112 rooms
800-221-2222
313-458-7111

Upcoming E-vents

July 9 & 10 Mid-America Electric Flies, Midwest RC Society 7 Mile Rd. Flying field, Salem Township, MI. CDs Keith Shaw and Ken Myers Presented by the Ann Arbor Falcons, Electric Flyers Only of Southeastern Michigan and the Midwest RC Society, Info: Contact Ken Myers kmyersefo@mac.com or 248-669-8124

Aug. 7, Sunday RESCHEDULED Watts over Wetzel, Wetzel State Park, Event flying starts 9 a.m., more info: www.rccd.org/WOW.htm, CD Mike Pavlock - phone (586)-295-3053 or wattsoverwetzel@gmail.com

Sept. 10 & 11 E-Fl-Iowa RETURNS! CD Darryl, Morrison-Rockwood State Park, Morrison, IL. Morrison is 125 miles west of Chicago on US 30 about 4 miles north of I-88.Direct questions or suggestions to Daryl Miller at dlmrcpilot@gmail.com

Keith Shaw maidens his
Toledo Award Winning Yak UT-1
Details Inside

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

http://homepage.mac.com/kmyersefo

The Next Monthly Meeting:
Date: July 9 & 10 **Time:** 8:30 a.m.
Place: Midwest RC Society 7 Mile Rd. Field
Mid-America Electric Flies