

the

Ampeer

March

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2012

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No Mailed Ampeer Subscriptions

The Next Meeting:
Thursday, March 15, 7:30 p.m. Ken Myers' house

What's In This Issue:

A Different Power System Recommendation for Harvey's 80" PBY - Electric Twins, Are You Ready? - A 1/4-scale Piper Tri-Pacer - Michigan Source for Indoor 3D Types - Musing From Iowa - Looking for Plane Plans? Good February 2012 Issue - RC Safety Item: ArmSafe - Maxx Products Arming Switch - Indoor Flying Equip. Source - A Brooklyn Dodger - RC Micro World Continues - RCadvisor Calculator News - Upcoming E-vents

A Different Power System Recommendation for Harvey's 80" PBY
By Ken Myers

The February 2012 issue of the *Ampeer* presented a power system recommendation for a scratch-built 80" PBY; "Twins: An 80" PBY Power System".

At an expected flying weight of 11.25 pounds, I recommended a power system that would provide about 1125 watts in.

While the power system that I recommended should work, I have since rethought the recommendation. I did NOT like the high amp draw, for me, from the battery of anywhere from 60 to 80+ amps depending on the prop used.

The battery pack voltage can be increased by going from my recommended 5S Li-Poly pack to a 6S. A 6S Li-Poly has a NOMINAL VOLTAGE of 22.2v. $1125 \text{ watts in} / 22.2\text{v} = 50 \text{ amps}$.

Again I used the information for the Cobra line of motors at Innov8tive Designs. According to the propeller test results for the Cobra C3520/14 (4346-700, 216g), a 10x5x3 Master Airscrew at 22.2v volts yields; 27.52 amp, 610.9 watts in,

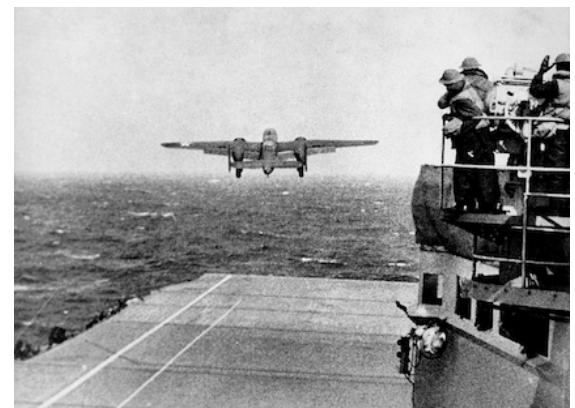
12,740 RPM and a pitch speed of 60.3 mph.

(http://innov8tivedesigns.com/Cobra/Cobra_3520-14_Specs.htm)

The Castle Creations' Ice or Ice Lite 50-amp ESCs remain a good choice for speed controls, but the battery can be a single 6S1P 5000mAh Li-Poly.

I believe that this is a lot better way to go because it eliminates any parallel pack harnesses or wiring while still 'feeding' both motors from a single pack.

Electric Twins, Are You Ready?
by Ken Myers



Twin-engine aircraft, twins, seem to

fascinate many RC modelers. Maybe it is an historical image we carry in our minds. We can picture a Doolittle B-25 lifting from the deck of the Hornet or the sleek design of a de Havilland DH-88 Comet.



Unfortunately, all too often our fantasy, when put into practice with a model twin, doesn't work out all that well.



Are Twins Really More Difficult to Fly?

Several EFO members and friends fly twins on a regular basis. Keith Shaw flies his DH-88 Comet "Black Magic" or an Aero Commander Shrike or his modified TwinStar seaplane. Jim Young might have his self-designed DH-88 Comet or Gloster Meteor. Denny Sumner may have his Sportwin, Super Sportwin or HOB Commander/Shrike. Paul Sockow might be seen flying his Multiplex

TwinStar II. Jim Senia brings out his Dynam Grand Cruiser Twin. Tom Bacsanyi usually has his big P-38 at many of our outings. Rick Sawicki has a Banana Hobby P-38.

What do all of these pilots and all of their planes have in common? They all use electric power systems in their planes. They have removed one of the big headaches of flying a twin by using a reliable power system.

Factors Influencing Twin Success

There are four factors that greatly influence the success of any twin.

The **first factor** is the wing cube loading. A review article, "Cubic Wing Loading (CWL)" is found at:

<http://www.theampeer.org/midwest/articles/cwl.html>

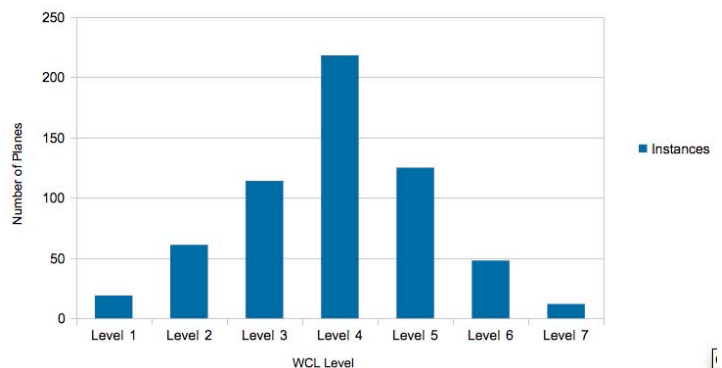
More information on Wing Cube Loading (WCL) may be found in the Site Table of Contents at the EFO Web site. Look for the heading Cubic Wing Loading.

<http://www.theampeer.org/sitetoc.html>

I have found seven WCL levels.

- Level 1** ? - 2.99 oz./cu.ft. flies like indoor
 - Level 2** 3 - 4.99 oz./cu.ft. flies like backyard flier
 - Level 3** 5 - 6.99 oz./cu.ft. flies like park flier
 - Level 4** 7 - 9.99 oz./cu.ft. flies like trainer/sport
 - Level 5** 10 - 12.99 oz./cu.ft. flies like adv. sport
 - Level 6** 13 - 16.99 oz./cu.ft. flies sporty for an Expert
 - Level 7** 17+ oz./cu.ft. requires expert finesse on the sticks and a complete understanding of the things not to do with the particular aircraft!
- The majority of planes flown by the whole RC Community, electric/glow/gasoline, are **WCL Level 4** planes. On any given day at an RC flying field you see more planes that belong in **Level 4** than any other type.

Number of Aircraft Recorded per WCL Level (Jan. 2012)



Over the years I have logged data for over 600 individual aircraft. The data comes from reviews in magazines, online and personal experience. The data in the graph on the previous page demonstrates that **Level 4**, 7 oz./cu.ft. through 9.9 oz./cu.ft., is the dominate type of RC aircraft. Well over 1/3 (218) of the logged planes are of this type.

The data, in Excel workbook form, is at <http://www.theampeer.org/new-power-theory/metricnewtheory.xls>

The majority of RC twins (tables on next page) are found in **WCL Levels 5, 6 and 7!** The majority of RC pilots fly planes in **WCL Levels 1 - 4 or 5.**

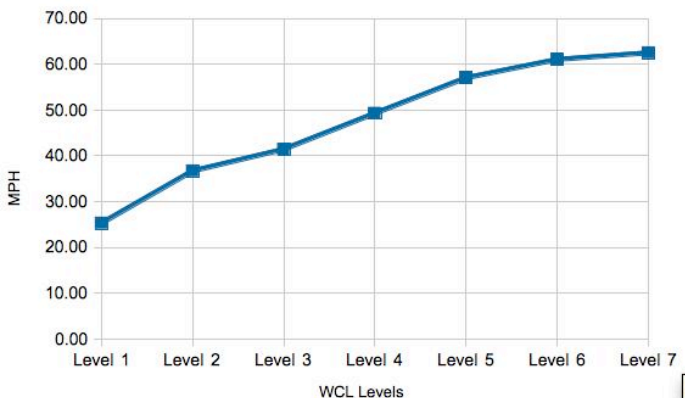
A **second factor** that influences the success of a twin is speed. There is no, or very, very little data available on actual flight speeds for the majority of RC models.

In his article, "Electric Twins", by Keith Shaw, Model Airplane News, Dec. 1991, he notes "Actual flight speed for streamlined twins will be at the prop (pitch) speed or a little faster. Twins with higher drag such as large radial cowls or large cross-section fuselages might only be 85 to 90 percent of the prop (pitch) speed."

I have calculated the median pitch speed and average pitch speed for the 600 models based on their stated prop pitch and RPM.

The graph shows the median pitch speeds for electrically powered prop planes in **WCL Levels 1 through 7.** Median indicates that half the planes are faster and half slower, but it gives a reference point.

Electric Median Pitch Speed



The trend is quite clear. As the wing cube loading (WCL) level increases, the median pitch speed also increases. Most of the electric planes at the flying field, **WCL Level 4**, are flying at a median pitch speed of about 50 mph. Most twins are found

in **levels 5 through 7** where the median pitch speeds are between 58 mph and 62 mph.

The **third factor** is wing planform and overall design. As demonstrated by the photo at the left column of right 2, a highly double-tapered wing planform can sometimes provide unwanted consequences, even worse than when used on a single engine aircraft.

Advice For a Successful Twin Project

There is little help online regarding the selection and tips for a twin project. There are two articles online that provide some tips for glow powered planes. They are "So You Want To Fly Twin Engine RC Planes" author unknown and "twin tips - 1/21/2012" by Ed Moorman.

<http://www.anything-rc.com/twin-engine-rc-planes.html>
http://www.rcuniverse.com/forum/m_10913690/tm.htm

Both articles stress the importance of having a reliable power system, which using an electric power system provides.

Both authors are vague about wing loading.

Author Fly Twin, "Wing loading is higher than standard airplanes and so landing speeds are faster... Do not try to slow down and risk a stall..."

Ed Moorman, "5. Twins are heavy... and have a higher wing loading.

6. Twins land faster. Since they are heavier, a twin tends to land a little bit faster..."

Increasing the Chance of Having a Successful First Twin Experience

For the 'typical' sport pilot, it is a good idea to select a plane with a lower WCL than a typical twin.

As with most things in life, there are exceptions. Twins are no different. (See the Exceptions table and article continued on p.5)



WCL Level 5 Planes	Wt. oz.	Wing Area	WCL	WAL	
NICK ZIROLI GIANT SCALE PLANS for 1/7 B-25 Mitchell 118"	720	2400	10.58	43.20	
Dynam 4Ch Twin Brushless SkyBus 58"	46.2	381.3	10.72	17.45	
WOWPlanes Messerschmitt Bf 110	96	608	11.07	22.74	
G&P Sales 81" PBY-5A Catalina	168	876	11.20	27.62	
Great Planes ElectriFly PBY Catalina Seaplane EP ARF	52	395	11.45	18.96	
Hobbico TwinStar 25	88	560	11.47	22.63	
Silver B-25J Mitchell 52 - 71" Multi Twin Engine Nitro	148.8	778	11.85	27.54	
HOB Electric Commander	18	187	12.16	13.86	
G&P Sales PBN NOMAD	320	1270	12.22	36.28	
Transall C-160 26 - 72" Scale Nitro	100.5	581.25	12.39	24.90	
G&P Sales G-44 WIDGEON	720	2160	12.39	48.00	
Jim Young's DH-88 Comet w/retracts	38	300	12.64	18.24	
Piper Twin Comanche 46 ARF by Seagull	176	830.8	12.70	30.51	
Ritinger Sportwin	29	248	12.83	16.84	
Ritinger Super Sportwin	71	450	12.85	22.72	
Top Notch Aero Commander Shrike	56	382	12.96	21.11	
	average:	177.97	775.46	11.97	25.79
	median:	92.00	570.63	12.19	22.73
WCL Level 6 Planes	Wt. oz.	Wing Area	WCL	WAL	
Jim Young's Gloster Meteor	130.0	668.00	13.01	28.02	
P-82 Twin Mustang 40 - 70.5" Nitro	152.0	736.00	13.15	29.74	
WOWPlanes Lear Jet	112.0	600.00	13.17	26.88	
Pica Dualist	172.0	795.00	13.26	31.15	
CMP de Havilland Mosquito 25~32 - 73" Nitro	184.0	825.00	13.42	32.12	
Electric Brushless/Nitro Gas OV-10 Bronco 15 - 48"	70.4	434.00	13.45	23.36	
Top Flite Douglas DC-3 Twin GE Kit	160.0	750.00	13.46	30.72	
WOWPlanes B-25 Mitchell	64.0	404.00	13.62	22.81	
WOWPlanes B-26 Marauder, 60" span	80.0	460.00	14.01	25.04	
VQ 1/9 Scale P - 61 Blackwidow	328.0	1177.50	14.03	40.11	
PBY 5-A CATALINA (Wing span 104 inches)	368.0	1270.00	14.05	41.73	
WOWPlanes B-26 Marauder, giant scale	192.0	820.00	14.13	33.72	
NICK ZIROLI GIANT SCALE PLANS for 1/8 B-25 Mitchell	576.0	1700.00	14.20	48.79	
E-flite Deuces Wild	168.0	740.00	14.42	32.69	
Twin-Engine Sky Trainer 46 - 71" Nitro/Electric Powered	176.0	763.00	14.43	33.22	
NICK ZIROLI GIANT SCALE PLANS for 1/5 D-18/C-45	720.0	1950.00	14.45	53.17	
NICK ZIROLI GIANT SCALE PLANS for 1/7 P-61 Blackwidow	720.0	1875.00	15.32	55.30	
eRC B-25 Apache Princess EPO Twin	61.5	356.00	15.82	24.88	
BH Commander Twin 46 ARF w/Air Retracts 81"	169.6	697.00	15.93	35.04	
G&P Sales F7F TIGERCAT	192.0	736.00	16.62	37.57	
	average:	239.8	887.83	14.20	34.30
	median:	170.8	745.00	14.04	32.40
WCL Level 7 Planes	Wt. oz.	Wing Area	WCL	WAL	
B-25J Mitchell ARF by Hangar 9	248.0	851.00	17.26	41.96	
Great Planes ElectriFly G-44 Widgeon EP ARF	72.0	373.00	17.27	27.80	
WOWPlanes A-10 Thunderbolt II 74" span	224.0	790.00	17.43	40.83	
NICK ZIROLI GIANT SCALE	672.0	1625.00	17.73	59.55	
NICK ZIROLI GIANT SCALE PLANS for 1/8 C-47/DC-3	720.0	1700.00	17.75	60.99	
Twin Otter ARF by Hangar 9	211.2	738.00	18.20	41.21	
BH Commander Twin EP ARF 58"	73.6	360.00	18.62	29.44	
Top Flite Cessna 310 Twin ARF	320.0	914.00	20.01	50.42	
DIAMOND DA-42 FULL COMPOSITE	112.9	448.26	20.55	36.26	
Keith Shaw's Aerocommander Shrike	36.0	200.00	21.99	25.92	
ESM F7F Tigercat	371.4	944.64	22.10	56.61	
C-160 TRANSALL	91.7	341.00	25.16	38.72	
VQ A - 26 Invader	176.0	510.00	26.41	49.69	
VQ P-38 Lightning	265.6	645.00	28.02	59.30	
	average:	256.7	745.7	20.6	44.2
	median:	217.6	691.5	19.3	41.6

WCL Level Exceptions:	Wt. oz.	Wing Area	WCL	WAL
Jeff Weisend's DC-3 (MA Feb. 12, p.97)	116	1421.28	3.74	11.75
Multiplex TwinStar II (Fly RC Nov. 2006)	53	667	5.32	11.44
de Havilland DH-84 Dragon-2, RC electric scale 94.7" wingspan	232	1700	5.72	19.65
New 310-Scale 90 - 92.5" Twin Engine Nitro Power	176	1318	6.36	19.23
Keith Shaw's de Havilland Comet w/28 Nicads	136.0	900.00	8.70	21.76
Dynam Grand Cruiser Twin (wing area estimated based on full-size)	42	380	9.80	15.92
SIG Do 217	35.0	335.00	9.86	15.04

According to *Model Aviation*, Feb. 2012, page 97, Jeff Weisend's DC-3 (photo p. 3) has an astoundingly low WCL of 3.74 oz./cu.ft. and flies like a backyard flier. With a wing area of approximately 1420 sq.in. and a weight of only 7.25 lb./116 oz. it is truly amazing. This is not something a typical modeler would be able to create, not that they might want to.

As noted in the text, "... the model looks better in the air from a distance, as one can see the effect on the plane of the slightest breath of wind."



The Multiplex TwinStar II is a good place to start a 'twin experience'. It has the WCL of a park flier, although it is too heavy to fit the AMA definition of a Park Flyer, but it flies like one.



<http://mysite.verizon.net/milkyway99/id3.html>

A biplane twin like the de Havilland DH-84 Dragon-2 or the DH-89 Rapide are good choices.

The biplane configuration lowers the WCL. With no retracts, the weight is kept down and construction kept simple.



The New 310-Scale 90 - 92.5" Twin Engine Nitro Power Radio Controlled Plane ARF is a glow powered plane but has what appears to be an extremely low WCL, based on **their** specifications. <http://www.nitroplanes.com/new319092twe.html>

None of the data that I've collected on RC planes ranging from 1000 sq.in. and up suggests the advertised flying weight of 11 lb. is possible.

Dick Pettit Associate Editor of R/C REPORT Magazine reviewed this plane here:

<http://www.rcgroups.com/forums/showthread.php?t=619652>

His weighed 16.5 lb. WCL at 16.5 lb. is 9.5 oz./cu.ft. Although powering this plane would be very expensive, it could make a good first twin electric.



A twin the size and weight of Keith Shaw's "Black Magic" is best left to the master. The empty fuselage weighs just 4 oz. Can you do that?



The Dynam Grand Cruiser Twin flies like a sport plane. Anyone who is comfortable flying sport planes should be successful with it.



The SIG Do 217 provides one more clue to producing a successful twin. It has a WCL on the high side of sport or low side of advanced sport, which indicates that folks who generally fly planes in the **Level 4** category shouldn't have a problem flying it. The designer used several "tricks" to make this a twin that can be flown by the 'masses'.

One reason that it flies like a sport plane is because the designer enlarged the wing. Using the fuselage length to scale the model from the full-size plane, it is about 1/19-scale. At 1/19 scale the wing area should be 242 sq.in. With a 242 sq.in. wing the model would have a WCL expected of a typical twin, ~16 oz./cu.ft.

Using the wingspan, the plane scales to about 1/16-scale. At 1/16 scale the wing area would be about 349 sq.in. The given wing area for the model is 335 sq.in. By enlarging the wing the designer moved the WCL to just about 10 oz./cu.ft, which makes it a bit easier to fly for most RC pilots.

Also, by having the rudder and the landing gear as "optional", the designer cut down on the ready to fly (RTF) weight.

The **fourth factor** is pilot experience.

To learn what your pilot experience is, inventory the planes that you fly day in and day out and calculate their wing cube loadings.

$$WCL = \text{RTF weight in ounces} / ((\text{wing area} / 144)^{1.5})$$

The highest WCL of your regularly flown fleet indicates the level that you are comfortable flying at.

For me, it would be my Bill Griggs Rocket and my self-designed E-250. The Rocket has a CWL of 16 oz./cu.ft and the Lightening (yes, I meant Lightening not Lightning) E-250 14.9 oz./cu.ft. Both are CWL **Level 6** types. Personally, I would choose a twin like those listed in the **Level 5** table to start with and then move up through each progressive level to reach my 'ultimate scale twin'.

Powering a Twin

Whenever possible, follow the recommendation of the manufacture, designer, supplier or what was used on similar types and sizes found in the modeling press or online.

If that is not possible, selecting a power system for a twin propeller type plane depends on ground and fuselage clearance. The largest diameter prop should be chosen that provides sufficient clearances.

There are many ways to select an electric power system, if one is not recommended. If you are unsure of how to do that, please drop me an email, and we will discuss it here in the *Ampeer*, or give me a call. Also, see the February 2012 *Ampeer*. I describe how to select a power system for an 80" PBX and that information may be applied to other twins as well. Also, the first article in this issue should help as well.

Final Tips When Choosing a Twin

- 1.) For your first twin, choose a subject with a WCL similar to or just below the WCL level you are comfortable flying at now. There is a lot to learn about twin engine operation. Learning to fly with a WCL greater than you are comfortable with should not be one of them.
- 2.) Before flying your twin, put in a lot of practice time on your highest WCL plane(s) and consider acquiring a single-engine type with an even higher WCL or even adding weight at the CG to a plane you already have.
- 3.) If you 'roll your own' designs, consider going through a series of steps to get to your ultimate twin. Remember that the more options* that are added to the airframe the heavier it becomes with a

resulting higher WCL and the more difficult it becomes to fly.

(options* - anything that is added to the airframe that has nothing to do with controlling the airplane. Keep the Sig DO-217 design in mind; start with only the necessary flight controls, keep the landing gear simple, if used, and/or fudge the wing area of the early prototype.)

Wiring Twins

Information about wiring brushless twins:

Video:

<http://www.youtube.com/watch?v=aADN7iCx9E4>

Web Links:

<http://www.electricflyermagazine.com/page17.html>

<http://www.electricflyermagazine.com/page16.html>

<http://www.electricflyermagazine.com/page18.html>

Magazine:

November 2004, *Fly RC*, Tom Hunt's article on multi-motor brushless power systems.

A 1/4-scale Piper Tri-Pacer

From Don Belfort via email



Hi Ken,

Here's my 2012 Project. It is a 1/4-scale Piper Tri-Pacer from Calvin's Classic Plans. I'll keep you posted on the Tri-Pacer!

Michigan Source for Indoor 3D Types

From Bill Mackey via email

Ken,

Many of the better indoor 3D type flyers are using aircraft from Western Michigan Parkflyers. We fly in a smaller size church space. Web address <http://wmparkflyers.com/default.aspx>

Bill

Musing From Iowa on Wing Cube Loading

From Plenny Bates via email

Ken,

Have enjoyed the Cube Wing Loading pieces.

I have two electric sailplanes and a pure sailplane that have low sink and yet are clean and penetrate fairly well. Modern composite and balsa construction permits thin wing sections that still have good strength.

The 2 meter Electron F5J (571" sq., 21.5 oz.) has a loading of 2.72 oz./cu. ft.

The Ava electric (1100" sq., 54 oz.) has a loading of 2.56 oz./cu. ft.

The AVA sailplane (37 oz.) has a loading of 1.75 oz./cu. ft.

These are all in the "indoor" category as far as wing loading. No wonder they have low sink and are easy to fly.

Sadly Kennedy Composites no longer sells the Ava series. They have the Electron F5J and a new Ava Pro series but it is harder to electrify than the Ava.

My Electron F5J has 200W/lb. input and the Ava 300W/lb., so they climb well. A friend thinks he can build an Ava electric for altitude limited electric soaring (ALES) competition down to 44 oz. which would give a loading of 2.08. For ALES you need only enough power to get to 660' in 30 sec so the battery and motor can be fairly light.

Bob Livin and I are looking forward to the Mid-Am and Keith's Birthday Party next season.

Plenny Bates

Looking for Plane Plans?

From Tom Cimato via email

I received this reminder from Tom. Check it out.
KM

Hi,

Bob Aberle's "Frequently Asked Questions" column in the February 2012 issue of *Model Aviation* listed this plan service in the UK. Great source of downloadable pdf plans. Enjoy "hours" of searching and nostalgia.

<http://www.outerzone.co.uk/index.asp>

Good February 2012 Issue

From Art Lane via email



Ha, did I say your January issue was Fantastic? Well, you've outdone yourself this time. The February issue is a real keeper, even has indoor info. Told ya we'd get you into this. Many thanks Ken. GREAT Job.

I've ordered a new receiver from Hobby King, for Ultralight indoor models and have pulled out my Lasey to revamp it along with a new heli I got. It is German designed but China made. I have had a ball with this one.

I've sent some pictures of my latest project and our indoor with the new Parkzone cub and a fellow flyer with his Champ.

Many thanks for the latest issue. I'll have to print this one off for the other fellows to read.

I'll send more info on the Lasey as it gets nearer to flying time.

Art



Thank you so very much Art. Keep us informed on the Lasey. You might be interested to know that

your name first appeared in the Ampeer in the July 1988 issue. Scroll to the bottom of the issue and there is your name on the map to the London field.
<http://www.theampeer.org/ampeer/ampjul88/ampjul88.htm>

RC Safety Item: ArmSafe

From Doug Schumacher via email

You've probably seen this advertised in all the current RC magazines, but here's a little more 'background' on Doug. KM

Hi Kenneth,

I'm a RC club member from the WRC Club in Gilford, NH. And after years of seeing propeller injuries, we developed the ArmSafe System to help reduce the possibility of propeller strikes. IT IS AN OLD IDEA IN A NEW PACKAGE. The product was developed out of necessity for a small, light, and high amp arming system. The product has gone through several iterations over the many months of development and testing, to make it as small and light as possible. It has been an exhaustingly long (and expensive) process to bring this product to market, but we are finally here!!!

Our goal was to create a great arming system to add another layer of safety to help keep our electric RC modelers safer. See them at <http://www.SharpRC.com>.

Thank you and Happy New Year,
 Doug Schumacher



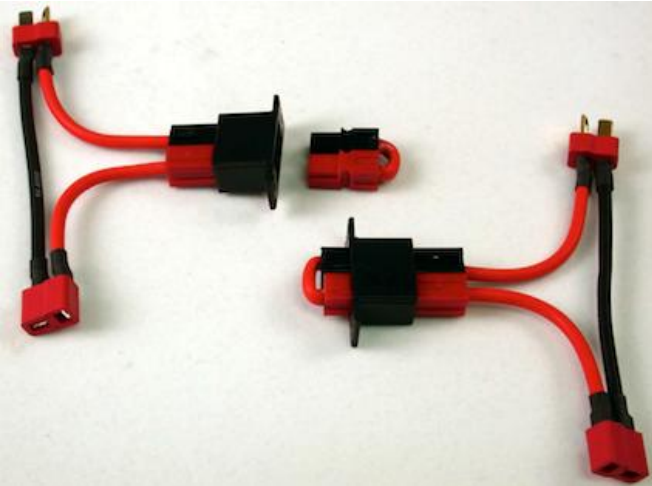
ArmSafe is available in both 12ga and 10ga wire

Maxx Products Arming Switch

As Doug mentioned, this arming switch has been on the market for quite awhile and has been mentioned in previous *Ampeers*.

<http://www.maxxprod.com/mpi/mpi-21.html#Miracle%20Switch>
Scroll to the bottom of the page.

It is available with both Deans and Anderson Power Poles with 14ga and 12ga wire. Deans are shown in the photo. The arming plug is APP on this style.



Indoor Flying Equipment Source

From Alex Stöckli via email

Hi Ken,

First of all, I would like to thank for your monthly information about EFO. I like it very much. Now, since the Winter season is here, the discussions about indoor flying is the number one theme with the club members. I am always looking for mini or micro motors and servos. While looking for parts on the Internet, I came on this page: <http://www.aeorc.com>.

The Chinese people have a lot of micro units, like 15 gram brushless motors and servos, escapements, etc. at very competitive prices. Probably you know this site already or if not, then look once into it.

I came on this site because I was looking for mini devices for the Mud Bug I am building from Stevens Aeromodel. So maybe you can eventually give this address in one of your newsletters to the EFO fans.

I take the opportunity to send you all my best seasons greeting for the coming days.

Yours Alex (Oldtimer, only 80 years)!!!!



A Brooklyn Dodger

From Willie McMath via email

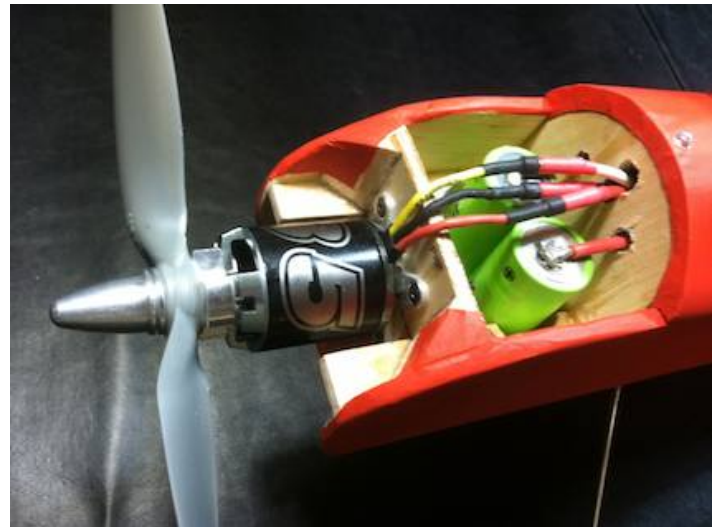
Hello Ken,

Enjoyed your latest issue of the Ampeer.

Here is my latest project with specifications and photos. It is a Brooklyn Dodger old-timer with electric power. It has a 72" wing span. Power comes from four "A123" 2300mAh batteries and two "A123" 1100mAh cells for the Xtreme link 2.4-Futaba 8aup set up. I will fly this in the spring. I can't take this cold weather.

Congrats on your Award. Well done.

Happy Holiday season to You and Family.
Willie McMath



RC Micro World Continues

From Bob Aberle via email

It is now published and edited by Roland Friestad. Roland took the place of the late, John

Upcoming E-vents

March 15 EFO meeting, 7:30 a.m., Ken Myers' house.
Everyone with an interest is welcome to come.

April 13, 14, 15 58th Weak Signals Toledo RC Expo, Seagate Centre, Toledo, OH <http://www.toledoshow.com/>

June 2 & 3 Keith Shaw Birthday Party Electric Fly-In", Balsa Butcher's Field near Coldwater, MI, contact Dave Grife phone: 517.279.8445 email: grifesd@yahoo.com

June 2 & 3 Watts Over Wetzel, Radio Control Club of Detroit, contact Mike Pavlock (586)-295-3053 or email <http://www.rccd.org/WOW.htm>

July 8 & 9 Mid-America Electric Flies, Midwest RC Society flying field, 7 Mile Rd., Salem Township, MI. Keith Shaw and Ken Myers CDs. Email Ken for info

(continued from page 9)

Worth. *(The Cloud 9 Web site should be up and running by the time you receive this issue. KM) We*

also have plans to place all 38 of my micro designs, that appeared as construction articles in RCMW, on to a single CD which will include access to full size plans and as a bonus will have a copy of my 120 page book/ CD on the subject of micro/indoor RC flying.

RCadvisor Calculator Now 100% Free

From Carlos Reyes via email

I have launched a brand new version of my website, RCadvisor.com (<http://RCadvisor.com/>). There are two major changes:

1. My model airplane calculator is now 100% free.
2. I'm posting at least one high quality article a day.

With over 10,000 registered calculator users already, I expect the calculator to be more popular than ever. The feedback on the articles has also been very positive. I hope you like the changes.



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

<http://www.theampeer.org>

The Next Monthly Meeting:

Date: Thursday, March 15, 2012 **Time:** 7:30 p.m.

Place: Ken Myers' house (see address above)